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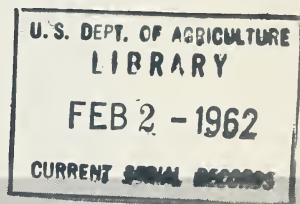
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# FRESH FRUITS on the LONDON MARKET



## Comparative Appraisal of Selected Fruits From Selected Countries



Foreign Agricultural Service  
Agricultural Marketing Service  
U.S. Department of Agriculture  
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# FRESH FRUITS ON THE LONDON MARKET

## Comparative Appraisal of Selected Fruits From Selected Countries

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### INTRODUCTION

In early 1961 the Foreign Agricultural Service and the Agricultural Marketing Service of the U.S. Department of Agriculture undertook a comparative appraisal of fresh fruits on the London market. The major objective was to evaluate the quality and condition of fruit on arrival from the United States and competing areas. Another objective was to acquaint U.K. importers with U.S. grade standards and inspection procedures with a view to expanding export markets for U.S. fruit.

The London market was chosen for this survey because it is the largest in Europe and particularly because it has a selection of fruit from more producing countries than any other European market.

This report summarizes the results of the comparative analyses made on supplies of apples, pears, grapes, oranges, grapefruit, and lemons available on the London market during the period January 2 to April 18, 1961. It also includes general observations about fresh fruit marketing practices in the United Kingdom.

### SUMMARY

#### Sampling

In this study, most samples were obtained and examined at the display rooms of the three fruit auctions held in London. These were the most convenient places to find representative samples, as containers of all types were open and the contents freely accessible for examination. For purposes of this survey, it was not practical to open and re-close strapped boxes at importers' stores.

Sample units consisted of 30 specimens of apples, pears, and citrus fruits, and approximately 34 pounds of grapes. Only one sample unit was taken from a single container. Two sample

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<sup>1</sup>Collaborating with Mr. Harrington on the study was E. R. Pheil, also of the Fruit and Vegetable Division of AMS.



units were taken from each lot of 1,000 boxes or less and 4 sample units from lots containing more than 1,000 boxes.

Nearly 2,400 sample units were examined during the survey, including 1,317 sample units of apples, 288 of pears, 217 of grapes, 221 of lemons, 201 of grapefruit, and 108 of oranges.

### U. S. Grade Standards Applied

To facilitate comparison, the U.S. grade standards were used as the basis for analysis. For U.S.-grown fruit, the grade stamped on the container was used. If no grade marks were found, U.S. No. 1 grade requirements were used. U.S. No. 1 grade requirements also were used for analysis of all fruit from competing countries.

### General Observations

A wide variety of types and sizes of containers was observed. Fiberboard cartons were used widely for U.S. fruits and were being used to a considerable extent by competing countries; not all were equally satisfactory in the protection they offered the fruit during shipment. Cartons from the United States and Canada generally performed satisfactorily. The smaller containers appeared to be preferred by importers and retailers.

Importers were confused by the large number of grade designations, both State and Federal, used on some U.S. fruits. Most competing countries use only one set of standards and ship only a single grade of fruit to London.

Fruit from most countries, as in the United States, was identified by a shipper's brand. But, fruit from South Africa, New Zealand, and Trinidad bore labels indicating principally the name of the originating country, but not the shipper. New Zealand lots, labeled on both ends of the box, also had assigned numbers for each variety of apples and pears on the labels.

### Commodity Comparisons

#### Apples

Fiberboard cartons were in general use for shipments of apples from the United States, Canada, Italy, Denmark, and England, while the standard western wooden apple box was commonly used by South African, Australian, Argentine, and New Zealand exporters. A 20-pound fiberboard carton was prevalent in receipts from Italy and England.

The London market showed a preference for green-colored eating varieties of apples. Dark-green Granny Smith variety from Australia sold at top prices. Green-colored Newtown and Golden Delicious varieties were well received, but lots with advancing color were discounted.

Practically all lots from the United States and Canada graded Extra Fancy or Fancy. Other countries generally shipped only one quality to the London market. However, countries other than the United States and Canada make little effort to sort red varieties for degrees of color.

Sizing of U.S. apples was irregular in 5 percent of the samples. This was a higher percentage than found in lots from competing sources. Nearly one-half of the lots in tray pack cartons from the United States were slack one-half inch or more. The relationship of size of apples to slackness of pack was not determined.

Except for color, shipments from competing countries were well graded and would easily grade U.S. No. 1 or better.

Storage lots in general were riper than new-crop shipments from the Southern Hemisphere, but most of the latter arrivals ripened fast, many lots of the early varieties from Argentina being ripe.

Damage by bruising in new-crop varieties packed in boxes averaged 5 percent, compared with 2 percent damage by bruising in storage varieties packed in cartons. Furthermore, damage by bruising averaged 5 percent in tight packs, compared to 2 percent in fairly tight packs. The percentages of damage by bruising increased slightly in slack packs. Damage by bruising was higher in ripe lots from all countries than in firmer lots.

### Pears

Use of both Federal and State grades on imports from the United States was confusing to London buyers, as similar grade names do not have the same requirements. For example, Washington Fancy grade for winter varieties of pears is identical with U.S. No. 2. Competing countries generally ship only one grade of pears to this market. In lots from competing countries, permanent defects averaged slightly higher than from the United States, but the averages were still within the tolerance permitted in the U.S. No. 1 grade. Scars and roughness were the principal defects.

Arrival condition of U.S. pears generally compared favorably with receipts from other countries. Some lots of Winter Nelis pears from the United States were off condition account of decay. Use of polyethelene box liners possibly accounted for most U.S. shipments arriving in good salable firmness. New-crop varieties from South Africa and Argentina were generally hard or firm on arrival, but ripened rapidly. Pears from other countries suffered considerably from skin discoloration.

### Grapes

Color varied widely between lots of U.S. Emperor grapes and between containers in the same lot. Importers wanted live,

attractive color over 60 percent or more of the surface of practically all berries in a container. Less than one-third of the lots examined from the United States merited a "Good" appearance rating. Poor arrival condition and dull, unattractive color caused another one-third of the lots examined to have "Dull" or "Poor" appearance. Poor color and wastey arrival condition of U.S. receipts on the London market were common complaints. Variations in the U.S. No. 1 grade designation on Emperor grapes were not understood by importers and also caused complaints.

Only a few Spanish Almeria lots were in competition with U.S. arrivals after the holidays. Early shipments of new-crop varieties from South Africa were low in soluble solids but presented a good appearance and were well graded and carefully packed.

### Lemons

U.S.-grown lemons were well received on the London market. They compared favorably with lemons from Cyprus and Israel and were definitely superior to receipts from Italy. Supplies were fairly constant throughout the survey period. Cartons from the United States arrived in good condition, except on diversions from continental ports. Only 85 percent of the lots of U.S. lemons examined were well colored, compared with 100 percent of the samples from all competing countries. Lemons from Israel, although in limited supply, all rated a "Good" general appearance, compared with a similar rating on three-quarters of the samples from the United States and Cyprus. Italian lemon samples rated only "Fair" or "Poor" appearance, mostly due to roughness and lumpiness. U.S., Cyprus, and Israeli lemons averaged 8-9 percent permanent defects, while Italian lemons averaged 39 percent, well below the U.S. No. 1 grade requirements. Decay averaged 1 percent in samples from the United States, Cyprus, and Spain.

### Grapefruit

California and Arizona grapefruit is quite similar in appearance and texture to the clean, bright Israeli fruit, which predominated on the London market during the survey. The trade was inclined to discount Florida fruit because of skin discoloration.

Arrival condition of most lots of U.S.-grown grapefruit was acceptable, but some lots had excessive decay and required reconditioning. California-Arizona lots averaged 4 percent decay; Florida samples averaged 2 percent decay. Grapefruit from Israel had an excellent appearance; it arrived in good condition with defects well within the tolerance and an average of less than one-half of 1 percent decay. Trinidad fruit had more discoloration and more permanent defects than Florida grapefruit.



## Oranges

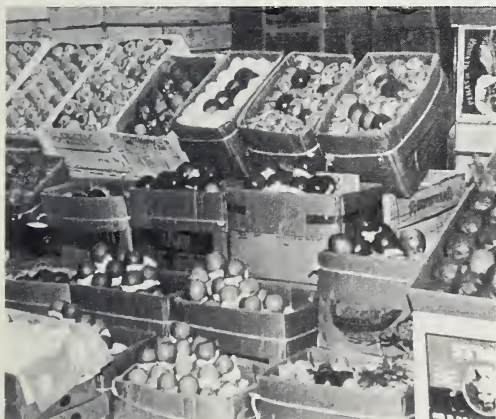
Oranges on the London market during the period of the survey came from Israel, Morocco, and Spain. No oranges from the United States were found during this period. All samples examined were bright, clean, similar to the types of oranges grown in California-Arizona. They were well graded and presented a good appearance. Condition of the fruit was generally good, except for some lots of Spanish Navel variety which were approaching the end of their season.

## **THE LONDON MARKET**

### Types and Location of Market Facilities

London has three primary market areas--Convent Garden, Spitalfields, and the Borough Market. The Covent Garden market, located in a very congested part of the city near Leicester Square and the Strand and partially surrounding the London Opera House, is the largest and most active. Dealers occupy space in glass-covered buildings and in stores on adjoining streets. Storage facilities--usually limited--are available on the dealers' premises and in nearby warehouses. Each dealer usually presents an attractive display of lots being offered for sale. A large wholesale flower market also is housed in the Convent Garden market.

At Spitalfields, located near the Liverpool Street station of the British Railways and close to "Petticoat Lane", are the facilities of two auction brokerage companies, as well as several primary importers and many other dealers. Most of them are housed in two buildings--the London Fruit Exchange building and a large glass-covered one, where most of the dealers have their space. Close by are the J & J Lyons Auction facilities and the stores of several other dealers. The London Fruit Exchange



Fruits on display  
in dealer's store in  
London's Covent  
Garden market.

Brokers Association, Ltd., has five members,<sup>2</sup> who issue joint sales notices and share sample rooms and auction sales room. The order of their displays and sales is rotated, so that each broker follows a different member each sales day. When sales open, each broker, in his turn, has 30 minutes in which to sell the lots listed in his catalog. If a second turn is necessary, each has 20 minutes and, for any subsequent sales, 15 minutes, until all lots have been offered for sale. Each member issues his own auction catalog and has his own auctioneer and sales staff.

The Borough Market is located at the southern end of London Bridge, on the south and west sides of Southwark Cathedral. This market area is relatively small. J.O. Sims, Ltd., one of the larger fruit importers in London, occupies a building bordering the Borough Market and operates its own auction. This firm also sells privately.

### Arrivals of Fruit

Fruit shipments generally reach the London market by boat or by truck via the channel ferry; rail receipts are practically non-existent. In most cases, entire shipments of fruit are trucked to the receiver's store or to a storage, as soon as unloaded from the boat. Some lots which are sold at auction are held at the dock until after sale and then are delivered direct to the buyers. In such cases, sample packages are taken to the auction display rooms for buyers to examine.

Truck arrivals from the Continent or from nearby growers are delivered to the receiver's place of business, to auction brokers' warehouses, or to commercial storages.

### Auction Samples and Sales

No figures are available on the proportion of the London fruit receipts sold at auction, but the auctions provide a large number of samples in strapped containers at convenient locations for buyers to examine.

The three auction companies follow similar selling patterns. They distribute notices of auction sales to prospective buyers a day or two prior to sales and, on the day of the sale, hand out auction catalogs. J & J Lyons holds an auction daily at 9:30 a.m. The London Fruit Exchange's sales are held on Mondays and Wednesdays at 10:30 a.m., and those of J.O. Sims, Ltd., Tuesdays and Thursdays at 11:30 a.m. Ordinarily, samples are brought to the display rooms, placed on long benches, and opened for buyer's examination. The lots being offered for sale are in adjoining

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<sup>2</sup>J. C. Houghton & Co. (London) Ltd., Connolly Shaw, Ltd., Keeling & White, Ltd., Goodwin Simons (London) Ltd., and J. & J. Adam & Co.

# FOR SALE BY AUCTION

(UNLESS DISPOSED OF PRIVATELY)

AT THE

London Fruit Exchange, Spitalfields, London, E.1

## MONDAY & WEDNESDAY

*FEBRUARY 6th & 8th, 1961, at 10.30 a.m.*

### MONDAY'S SALE, FEBRUARY 6TH

ORANGES	5,290	Pkgs.	ISRAEL JAFFA
"	3,200	$\frac{1}{2}$ -Bags & Boxes	SPANISH
"	1,500	Large Boxes	CYPRUS (Ovals)
"	442	Boxes	MOROCCAN
SOURS	82	$\frac{1}{2}$ -Chests	SEVILLE
"	500	Boxes	MOROCCAN
MANDARINES	563	"	SPANISH
GRAPEFRUIT	963	Large Boxes	ISRAEL JAFFA (Seedless)
"	898	Boxes	MOROCCAN
"	350	"	TRINIDAD
LEMONS	1,000	Cartons	CALIFORNIAN
MELONS	200	$\frac{1}{2}$ -Cases	ELCHE (Honeydew)
GRAPES	1,700	Boxes	SOUTH AFRICAN
PINEAPPLES	82	"	"
PLUMS	75	"	"
PEARS	900	"	"
"	2,060	"	ARGENTINA (Williams, etc.)
APPLES	5,400	Cartons	OREGON HOOD RIVER (Newtowns & Red Delicious)
"	2,000	"	ITALIAN
"	1,000	"	BRITISH COLUMBIAN (Winesaps)
"	450	Boxes	TYROLEAN (Kalterers)
"	800	Cartons	WASHINGTON
ONIONS	608	$\frac{1}{2}$ -Bags	VALENCIA
TOMATOES	230	Boats	ALICANTE
NUTS	100	$\frac{1}{2}$ -Bags	BRAZIL

Ex Lancastrian Prince, Siwa, Lesbek, Braque, Egyptian Prince, Ulster Star, Vives, Valdes, Eiko, Pacific Fortune,  
Drina, Wickenburg, Pretoria Castle, Bolinos, Ouidaia and Overland

1st J. C. HOUGHTON & Co. (London) Ltd.  
3rd CONNOLLY SHAW, Ltd.

2nd KEELING & WHITE, Ltd.  
4th GOODWIN SIMONS (London) Ltd.

5th J. & J. ADAM & Co.

warehouses, at arrival docks, or in commercial storages. Occasionally, lots that arrive at the docks too late to be sampled are sold without display samples. Frequently, samples arrive at the sample room just prior to the sale. In such cases, the samples are displayed in front of the auctioneer's rostrum in the sales room, at the time that the lot is offered for sale. It is customary practice for J.O. Sims, Ltd., to show all lots again in the sales room during the sale.

# **SURVEY PROCEDURE**

## Advance Information of Shipments

Three general sources of information were available on incoming fruit shipments. "Fruit Intelligence", issued weekly by the Commonwealth Economic Commission, listed shipments of fruit en route to United Kingdom by originating countries, name of steamship, expected dates of arrival, number and kind of containers, and port of entry. A few shipments from smaller ports in the United States were not included in this report. Notices of auction sales, previously described, gave fairly accurate up-to-date information. Receivers and their representatives willingly furnished valuable advance information of the expected arrival of their imports. This latter source proved most reliable and helpful.

## Obtaining Samples

Most of the sample units used in this survey were obtained at the three auctions. We made our selections there because it was not practical to open and examine packages at shipside. In the first place, docks servicing the London market are widely scattered and rather difficult to reach. Also, arrival and discharge schedules of fruit shipments are uncertain and often unpredictable.

On Monday and Wednesday mornings, we visited the two auctions at Spitalfields and Tuesday and Thursday mornings, we went to J.O. Sims, Ltd., auction at the Borough Market. We arrived well in advance of the sales and observed many display samples being opened. Grape and citrus sample units were selected and inspected prior to the sale. Our examination of these lots did not interfere or disturb the auction display. Sample units of apples and pears were inspected after the sales began and before the packages were closed. Display samples used in the survey were frequently checked with randomly selected containers from the entire shipment to confirm their representativeness.

Receivers willingly permitted us to inspect samples at their stores and warehouses, provided we restored the packages to their original condition. Inspection of products in strapped wooden containers was generally accomplished only at the auctions, where the containers were open. We were allowed to examine specimens from any portion of these boxes. Receivers objected to our opening strapped boxes at their stores because of the difficulty of restoring them to the original condition. Fiberboard cartons presented no problem at either location.





Member of the survey team examines apples from the bottom layer of a tray-pack carton at a dealer's warehouse, London.

### Size of Samples

It was decided before the start of the project that--

- (1) A sample unit would consist of 30 specimens of apples, pears, and citrus and approximately 34 pounds of grapes, which is the contents of a sawdust-packed chest.
- (2) Two sample units would be obtained from all lots of 1,000 boxes or less and four sample units from lots containing more than 1,000 boxes.
- (3) Only one sample unit would be taken from a container.

This procedure was followed. A minimum of 100 sample units for each product and for each country and a minimum of 30 sample units for each variety to be analyzed separately within a country were set up as goals.



## U.S. Standards Used as Basis for Analysis

For U.S.-grown fruit, the grade as stamped on the containers was used as the basis for our analysis. When no grade marks were found, as was the case with lemons and western grapefruit, U.S. No. 1 grade requirements were used. The U.S. No. 1 grade requirements were also applied to all fruits originating in other countries. The color requirements for red varieties of apples as listed in the U.S. apple standards for Extra Fancy, Fancy, and No. 1 were followed. For varieties not listed--for example, Cox Orange Pippin, Belfort, and Kalterer--arbitrary color requirements were set up. The details of these requirements are outlined in the analysis of our findings. Color of Emperor grapes was judged by the general appearance of the entire contents of a container, rather than by the color of individual bunches.

### Number of Sample Units Examined

Nearly 2,400 sample units were examined during the survey. This included 1,317 sample units of apples, 288 of pears, 217 of grapes, 201 of grapefruit, 221 of lemons, and 108 of oranges. A few samples of odd varieties were not included because the number was too small to be significant. Many additional lots were observed but not inspected.

## **GENERAL OBSERVATIONS**

### Types of Containers and Packs

Many varying types and sizes of containers were observed. These containers were not equally satisfactory in the protection they afforded the fruit during shipment. For example, cartons used to ship apples from the United States and Canada were superior to cartons from Italy and Denmark.

Buyer's preferences were not determined but, in general, the trend was for the use of smaller packages, particularly for citrus and South African fruits. Sampling was not adequate to determine accurately the proportions of different containers commonly in use.

### Grade Marks

It was interesting to observe the various grade designations used, particularly on shipments of apples and pears. Many importers indicated that the 10 or more State and Federal grade markings found on U.S. apples and pears were confusing. Most competing countries use only one set of national standards and ship only one grade of fruit to the London market.

## Identification of Lots

All lots of U.S. fruits were identified by shippers' brands. This was also true for shipments from most of the other countries. However, receipts from New Zealand, South Africa, and Trinidad bore labels indicating principally the name of the originating country; grower's or shipper's lots were identified only by numbers on the labels. South African fruits had the D.F.B. mark of the Deciduous Fruit Board. New Zealand fruit was labeled on both ends of the box, and each variety of apples or pears had an assigned number which appeared on the label in figures 2-1/2 inches high.

New Zealand and Australia also use a lettering system on the labels to indicate the size group of the fruit in the containers. "A" size apples included 80's to 100's, "B" - 113's to 138's, "C" - 150's to 180's, "D" - 198's and 216's, and "E" - 234's and 252's. For example, Cox Orange Pippin, 163 size were in boxes labeled "01" and labels were stamped "C". The purpose was to facilitate segregation and stacking on the docks and the assignment to marketing panel members. Boxes were also stamped with name of the variety and actual size or count.

## Trade Preferences

Our visits to the markets brought us into daily contact with importers or their representatives as well as many buyers. All factors in the industry, including top management, salesmen, buyers, and warehousemen, were most cooperative and helpful. After they knew the purpose of our project and observed our methods of operating, they freely and willingly made comments and indicated their preferences, as well as their objections, to deliveries of American fruits and fruit from competing countries. The following information was not obtained by any systematic means, such as a questionnaire, but rather was gathered from general observations.

### Apples

The London market has a definite preference for green-colored eating apples. Dark-green Granny Smith variety of apples from Australia brought top market prices. Newtown apples from our Pacific Northwest, which were uniformly green, were accepted readily. The same applied to Golden Delicious. Newtown or Golden Delicious lots which showed color advancing to light green or yellowish green were discounted. We were told that if "Newtown" apples were stamped "Yellow Newtown" on the box, this fact alone reduced the selling price 4 to 5 shillings, even if the apples themselves were green.

Consumers in the London area buy eating apples by the

pound. Consequently the size of the fruit has a bearing on the number of apples received in a purchase. Sizes 163 to 175 or 180 usually brought top prices on the wholesale markets, tapering downward for larger and for smaller apples. There seemed to be a ready market for the small sizes.

In general, the tray-pack fiberboard carton was accepted as a distinct improvement over the standard wooden box. However, low net weight of the fruit in cartons and undersizing of the apples in relation to the count marked were given as the causes of many objections.

In general, lots of Golden Delicious apples packed with polyethylene box liners were considered preferable to lots not packed with these liners. The principal advantage was a reduction in the amount of moisture loss and shriveling.

### Grapes

Buyers offered some objections to the size of the 34-pound chest commonly used for shipping Emperor grapes from California. It was suggested that a smaller container would appeal to the retailer whose sales were limited. The 10-pound lug used in shipping grapes from South Africa was cited as a suitable-size container.

Buyers showed a distinct preference for lots of Emperor grapes that generally had bright, attractive color over three-fourths or more of the surface of all the berries. Lots with dull color or with a substantial percentage of berries with little or no red color were not considered satisfactory.

### Grapefruit

Buyers on the London market indicated a preference for bright, clean fruit like that offered from Israel, Morocco, and California or Arizona, as contrasted with the slight discoloration commonly found on grapefruit from Trinidad and Florida. Internal quality, along with texture and shape, was considered secondary.

### Lemons

There seemed to be a preference for wrapped lemons, although some buyers expressed satisfaction with our jumbled, naked fruit in cartons. Objection to the naked fruit is based on the dusty mold found occasionally in cartons of U.S. lemons. This mold spreads readily to nearby sound fruit detracting materially from the appearance. There was some objection to the diphenyl odor found in some lots of U.S. lemons, but it was noted that Cyprus lemon packers also used diphenyl on their wraps.

## DETAILED COMMODITY ANALYSES

### Apples

Receipts of apples from the United States and competing countries were plentiful on the London market during the entire period of this survey. Of the 1,317 sample units of apples examined, 384 from the United States were included in the survey, 244 from Italy, 207 from Canada, approximately 100 each from Argentina, South Africa, and New Zealand, and lesser quantities from England, Denmark, Australia, and France.

### Grades Applied.

Shipments of apples from the United States had either State or Federal grade markings. In either case, the requirements of the U.S. Standards for Apples were used for evaluation purposes. For example, the requirements of the U.S. Extra Fancy grade were applied to all lots marked "Extra Fancy", "U.S. Extra Fancy", "Washington Extra Fancy" or "Virginia Extra Fancy". Lots examined were also marked "Fancy", "U.S. Fancy", "Washington Fancy", "Virginia Fancy", "Combination Extra Fancy and Fancy", "Combination Washington Extra Fancy and Fancy", or "U.S. No. 1". The U.S. Export Apple and Pear Act permits the use of these various grade marks, providing the apples meet the minimum requirements specified under the regulations. Needless to say, these many grade markings were confusing to importers.

### Types of Containers and Pack

Three general types of containers were used for apples: (1) Standard, nailed, western apple boxes, (2) fiberboard cartons, including telescope, and stapled types having trays, cells, or plastic foam dividers, and (3) slatted, nailed crates (table 1).

Considerable variation was found in the types of packs and in the extent of wrapping of the fruit in the different containers.

United States--Tray-pack cartons were most commonly found. In some lots, all apples were wrapped, in others, apples were naked, and in still other lots only apples in the top tray were wrapped. A few cartons had plastic foam pad dividers. Cell-pack cartons, varying in dimensions according to the count of apples in the carton, were less prevalent. There were some nailed boxes, generally containing small-size apples.

Canada.--The same types and sizes of containers were used for Canadian apples as for U.S., except there were no cartons with plastic foam pad dividers. Cell-pack cartons were more



prevalent in Canadian lots. A few jumble packs were noted, containing low-quality or small-size Russet variety apples.

South Africa, New Zealand, and Australia.--These countries used only standard nailed wooden boxes with all apples wrapped. Some packs of South African apples had top-layer apples double



Left, Italian Stayman Winesap apples displayed at London auction. Below, English apples in dealer's store, Covent Garden.





wrapped. Argentina apples were generally wrapped and packed in standard wooden boxes; a few wooden boxes had tray packs, with only top-layer apples wrapped. Also, a few cell-pack cartons from Argentina were noted.

Italy.--Twenty-pound cartons and forty-pound slatted crates were the most common packages used for shipping Italian apples, but other types of containers, such as cartons having plastic trays or cells and half crates, also were observed. In all packages, apples were in wraps, frequently with varying colors or in colored paper cups. Special care was usually given to the face of packs, making them attractive.

England.--Graded apples for table use were packed in several types of packages, including 20- and 40-pound cartons of various dimensions, some with cell compartments or with trays, and in boxes containing 35 to 40 pounds of fruit, some with trays or cells. Cooking varieties were plentiful, jumbled in bushel crates or boxes. (Cooking varieties were not included in this study.)

Denmark.--Tray-pack cartons were the usual type of pack, with a few cell types noted. Containers in some lots were in poor condition because of buckling and crushing.

### Condition of Containers

In general, the condition of apple containers from the United States and Canada was good, with little or no crushing or damage evident. Cell-pack cartons from Argentina were constructed of fiberboard that was not suited for long overseas shipment and reached the London market in poor condition. Some cartons from both Italy and Denmark also arrived in only fair condition because of inferior materials.

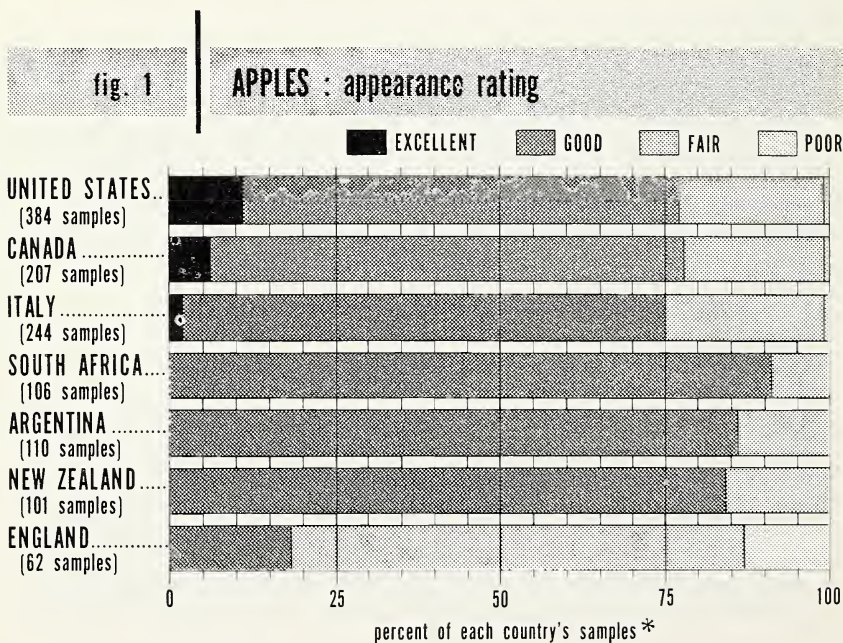
### Condition of Pack

The least amount of slackness was found in the cell-pack cartons and in western boxes, both from the United States and Canada (table 2). Tray-pack cartons from both countries had about the same percentages of fairly tight packs and packs that showed only one-half-inch slack. Tray-pack cartons were considered fairly tight when the apples in the top tray were level with the sides of the carton. Slackness below the sides of the carton was reported in half-inch variations. Sixteen percent of the packs from the United States and 23 percent of those from Canada were found to have an inch or more of slackness. Telescope-type cartons having plastic foam dividers were somewhat better than those with trays, having only 7 percent that were as much as 1-inch slack.

## General Appearance

In addition to an evaluation on the basis of the requirements in the U.S. Standards, a rating was given by the survey team for the general appearance of each sample unit. Factors considered in determining appearance ratings for apples were brightness and uniformity of color, uniformity of size, condition of pack, and freedom from quality and condition defects.

There was a wider variation in the general appearance of U.S. lots than in receipts from most other countries. The 11 percent of the U.S. sample units, 6 percent of Canadian units, and 2 percent of Italian units that received an "Excellent" rating had bright, attractive, uniform color and uniform size and were practically free from quality and condition defects (table 3). Sample units from New Zealand, South Africa, Australia, and Argentina were rated predominately "Good", although none were considered "Excellent". Lack of attractive or uniform color and the presence of damage by shriveling and bruising accounted for the "Fair" and "Poor" ratings given most lots from England and Denmark, and a number of lots from Italy, Canada, and the United States.



\* EACH SAMPLE = 30 APPLES

U.S. and Canadian Red Delicious were very similar in appearance, each having a few samples with "Excellent" appearance, about two-thirds of the samples rating "Good" and about one-quarter "Fair" (table 4). All of the South African Red Delicious (Starkings) rated "Good", and almost 90 percent from Argentina also rated "Good". Too few sample units of this variety from Italy and France were found to be able to draw any conclusions.

Golden Delicious from the eastern United States, with 60 percent rating "Fair" and 10 percent "Poor" because of shriveling, bruising, and poor general condition, failed to make as high an appearance rating as western lots. Western Golden Delicious varied widely in general appearance, 8 percent rating "Excellent", 12 percent "Fair", and 2 percent "Poor", the remainder being "Good". Canadian Golden Delicious rated only slightly better than eastern U.S. lots. All lots from other competing countries rated "Good".

Color.--Color requirements for red varieties, as specified in the U.S. Standards for Apples, were applied regardless of State or country of origin. Accordingly, a uniform color standard was followed throughout the study:

Variety	Percent color required in--		
	U.S. Extra Fancy	U.S. Fancy	U.S. No. 1
Red Delicious . . . . .	75	50	25
Starking . . . . .	75	50	25
Red Rome . . . . .	75	50	25
Winesap . . . . .	75	50	25
King David . . . . .	75	50	25
McIntosh . . . . .	66	33	25
Jonathan . . . . .	66	33	25
Stayman . . . . .	50	25	15
Delicious . . . . .	50	25	15
Rome Beauty . . . . .	50	25	15
Kalterer <sup>1</sup> . . . . .	50	25	15
Belfort <sup>1</sup> . . . . .	50	25	15
Cox Orange Pippin <sup>1</sup> . . .	25	15	Tinge

<sup>1</sup>In the case of varieties which are not listed in the U. S. Standards for Apples, arbitrary requirements were set-up solely for the purpose of this survey.

Shipments of Winesaps from the United States and Canada marked "Extra Fancy" showed little difference in color, each having an average of 99 percent Extra Fancy color (table 5). Canadian Red Delicious marked "Extra Fancy" with an average of 97 percent Extra Fancy color, however, had slightly more color than similar lots of this variety from the United States which had only 93 percent. Canadian "Fancy" lots of both Winesaps and Red

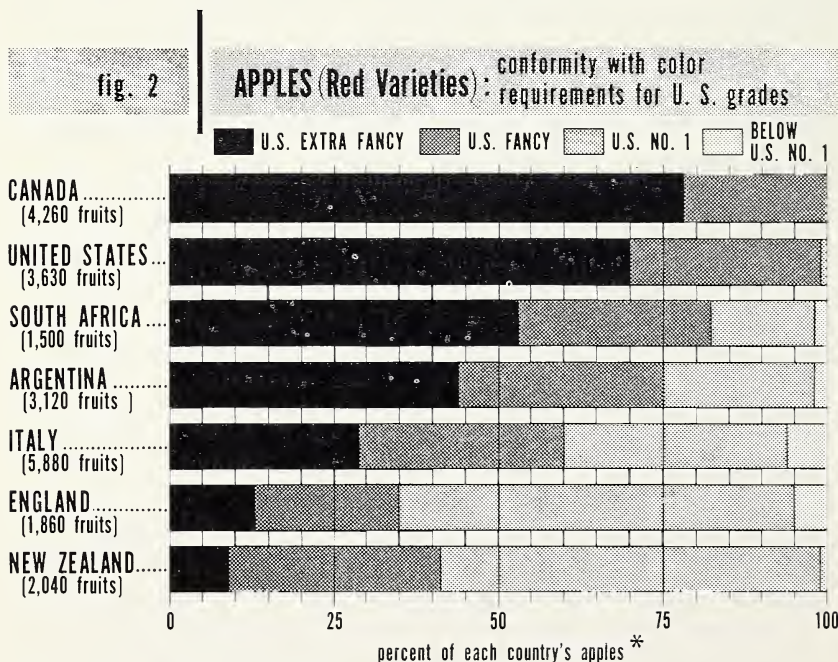


Delicious with 61 and 66 percent, respectively, of Extra Fancy color had a larger percentage of red than U.S. "Fancy" lots of these varieties which had 51 and 45 percent, respectively, of Extra Fancy color. One reason for these differences may be due to the fact that most of the U.S. apples examined were packed according to Washington and Oregon State standards which have lower color requirements than comparable U.S. grades.

Red Delicious (Starkings) from South Africa averaged 68 percent Extra Fancy color and 27 percent Fancy color and would meet the color requirements of U.S. Fancy. Lots of this variety from Argentina and Italy had less Extra Fancy and Fancy color and would meet the color requirements of U.S. No. 1.

Color of Cox Orange Pippins was variable, but lots from South Africa with 47 percent Extra Fancy and 29 percent Fancy color had decidedly better color than shipments from New Zealand, England, and Denmark. If a tinge of color was established as the minimum color requirement for Cox Orange Pippin, lots from Denmark might have difficulty meeting the grade.

Canadian apples with 78 percent Extra Fancy color and 22 percent Fancy color had slightly higher color than U.S. apples, which averaged 70 percent Extra Fancy color and 29 percent



\* ALL SAMPLE UNITS OF RED VARIETIES HAVE BEEN TOTALED FOR EACH COUNTRY REGARDLESS OF THE GRADE MARKED.

Fancy color. These averages would vary depending on the relative number of Extra Fancy lots from each country selected for survey. Apples from the United States and Canada, however, had significantly higher color than apples from other countries (table 6). In those countries shipping only one grade to the London market, the comparison indicates that South Africa, with apples showing 53 and 29 percent, respectively, of Extra Fancy and Fancy color, leads, followed by Argentina, Italy, England, Denmark, and New Zealand. Shippers from countries other than the United States and Canada apparently made no particular effort to sort for color.

Color of green or yellow varieties was particularly significant in the London market, since green is strongly preferred.

Of the sample units of Golden Delicious from eastern United States, slightly more than half were classed as yellow. Samples of this variety from western United States were somewhat better, but only 12 percent of samples were light green (table 7). This placed Golden Delicious from the United States at a competitive disadvantage, particularly with new crop lots of this variety from South Africa and Argentina, which were either light green or green. All lots of Canadian Golden Delicious examined were yellow.

Newtowns from the United States were variable in color, 39 percent of the lots having green color, 16 percent green to light green, 24 percent light green, and 21 percent light green to yellow. Canadian lots of this variety covered the same color range.

Dunn's Seedling variety from New Zealand were mostly light green, while those from South Africa were predominately green.

The Lavine variety from Italy resembles the Newtown, particularly as to color, and was reported as being retailed frequently as Newtown. The shape of Lavine is more elongated and block-shaped than Newtown and the stem basin is deep and acute compared to the shallow, rounded basin of the Newtown. Russetting around the stem cavity was also rather common on Lavine.

Size.--Containers from all countries generally were marked to indicate the count of apples. However, some Italian containers were marked only as to the range in circumference in centimeters, as 18/19 cm. or 19/21 cm. A circumference of 18 cm. corresponds to 2-1/4 inches in diameter and 20 cm. in circumference is comparable to 2-1/2 inches in diameter.

Size requirements as defined in the U.S. Standards for Apples were applied in the survey. These provide for a quarter-inch variation in diameter between the largest and the smallest apple in a container. Sample units having apples within this quarter-inch variation were considered "fairly uniform" in size. Samples having three or more apples that varied more than a quarter-inch were reported as "irregular".

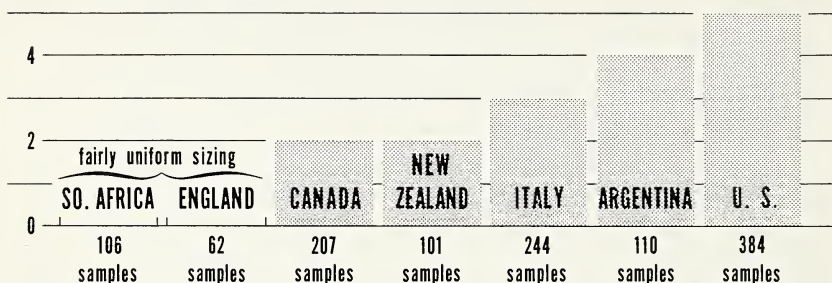
Shipments from the United States showed more irregularity--



fig. 3

**APPLES : irregular sizing**

percent of each country's samples \*



\* EACH SAMPLE = 30 APPLES.

5 percent of the sample examined--than those from any other country (table 8). Moreover, not all containers bearing the same count marks had fruits within the same diameter range. Apples from Argentina, with 4 percent sized irregularly, and from Italy, with 3 percent, showed the next greatest lack of uniformity in sizing.

**Permanent Defects.**--Sample units of apples were graded for permanent defects on the basis of the definitions in the U.S. Standards for Apples. U.S. and Canadian lots marked "Extra Fancy" or "Fancy" were graded according to the requirements of these grades in the U.S. Standards. Shipments from other countries were graded on the basis of U.S. No. 1 requirements. Scars, russeting, misshapen, and off-color were the principal defects. Other defects included sunburn, scab, insect injury, punctures, and cuts.

For all varieties combined, permanent defects in lots from the United States averaged 6 percent (table 9). Samples from Canada, South Africa, and Argentina also averaged 6 percent. Lots from Italy averaged 10 percent, including 5 percent off-color. Shipments from England and Denmark (all Cox Orange Pippins) averaged 12 and 15 percent permanent defects, respectively, mostly off-color and russeting. New Zealand lots averaged 8 percent, mostly russeting.

Western U.S. Golden Delicious samples averaged only 3 percent permanent defects, mostly due to scars, while eastern lots of this variety averaged 6 percent, half being due to russeting. Red Delicious lots from the United States averaged 8 percent,

including 4 percent off-color, which probably was due to the fact that these apples had been packed according to State color requirements but were graded in the survey according to the higher requirements in the U.S. grades. Newtown lots averaged 5 percent permanent defects, mostly scars and russeting.

One small lot of U.S. apples in violation of the Export Apple and Pear Act was encountered. These were marked "Washington C Grade."

Apples in competition with U.S. fruit are generally well graded.

Firmness.--The firmness terms defined in the U.S. Standards for Apples--hard, firm, firm-ripe, and ripe--were applied in this survey. Also the usual indices of firmness being used by the U.S.D.A. Fruit and Vegetable Inspection Service were followed. These indices include ground color, thumb pressure, wax development, cutting, and chewing tests. Use of the pressure tester was considered impractical in this study, since it would have been necessary to purchase large numbers of specimens, and pressure test readings had not been established for all varieties included in the survey.

Controlled atmosphere storages are now quite common in England and other European countries. This accounts for the extended marketing season for European-grown apples. While most of the competition for U.S.-grown apples came from storage varieties, new-crop varieties from the Southern Hemisphere started to reach the London market around the middle of March.

Newtowns from the United States, with 81 percent firm and 3 percent hard, compared favorably with lots of this variety from Canada, having 60 percent firm and 40 percent firm-ripe (table 10). Winesap variety samples from both countries were very similar in degrees of firmness. Red Delicious lots from the United States and Canada also were very similar, having about two-thirds of the apples firm-ripe and one-third ripe. Western U.S. shipments of Golden Delicious, which averaged about one-half firm-ripe and the other half ripe, were somewhat firmer than lots of this variety from the eastern United States, Canada, and Italy. All Italian varieties, except Lavine, also English and Danish samples, were mostly ripe, some firm-ripe.

New-crop receipts from South Africa were generally hard to firm, except for a few lots of Golden Delicious and Red Delicious which were ripe. In contrast, Argentine apples, which also were new-crop varieties, were mostly firm-ripe to ripe. Cox Orange Pippin variety lots from New Zealand were firm-ripe and other varieties from this country were mostly hard to firm.

Condition Defects.--Condition defects include factors that are of a progressive nature, developing in storage, in transit, or after packing. These consist chiefly of decay, scald, shriveling,

bruising, and similar deterioration. Only the more prevalent factors and those which are scorable against the U.S. No. 1 grade, as defined in the U.S. Standards for Apples, were recorded. Slight bruising, slight shriveling, and similar factors not causing damage have not been included. "Other" condition defects include internal breakdown, bitter pit, watercore, internal browning, and fruit spotting.

Decay and damage by bruising were found in samples of practically all varieties and from all countries (table 11).

The small number of lots of Folden Delicious from the eastern United States (20) had an average of 2 percent decay. Half of the samples had no decay; the other half had 3 to 6 percent. All lots had some damage by bruising, ranging from 6 to 40 percent, mostly 7 to 13 percent, and averaging 12 percent. These lots were generally ripe. Probably most of these shipments would have been too ripe to meet the U.S. Condition Standards for Export at the time they were loaded on board ship in the United States.

Golden Delicious from western United States, Red Delicious, and Newtown lots averaged 1 percent decay. About three-fourths of the samples from these lots had no decay, one-fourth had 3 to 10 percent decay. These Golden Delicious and Newtown lots averaged 2 percent damage by bruising. About two-thirds of the Golden Delicious samples had no damage by bruising, one-third had 3 to 13 percent. About three-fourths of the Newtown samples had no damage by bruising, one-fifth had 3 to 10 percent, and one-twentieth of the samples had 13 to 25 percent damage by bruising. Red Delicious samples averaged 4 percent damage by bruising, about one-half of the samples having none, two-fifths with 3 to 10 percent, and one-twelfth with 12 to 30 percent.

Winesap lots from the United States had slightly less condition defects, averaging less than one-half of 1 percent decay and 1 percent damage by bruising. The few samples of McIntosh from the United States (6) averaged 6 percent damage by bruising and had no decay.

Canadian lots generally averaged 2 to 3 percent damage by bruising and 1 percent or less decay, except Golden Delicious lots with 5 percent decay. The few lots of Canadian Red Romes examined had an average of 7 percent scald.

Cox Orange Pippin variety from England and Denmark averaged 1 percent decay, 3 to 4 percent shriveling, and 1 or 2 percent damage by bruising.

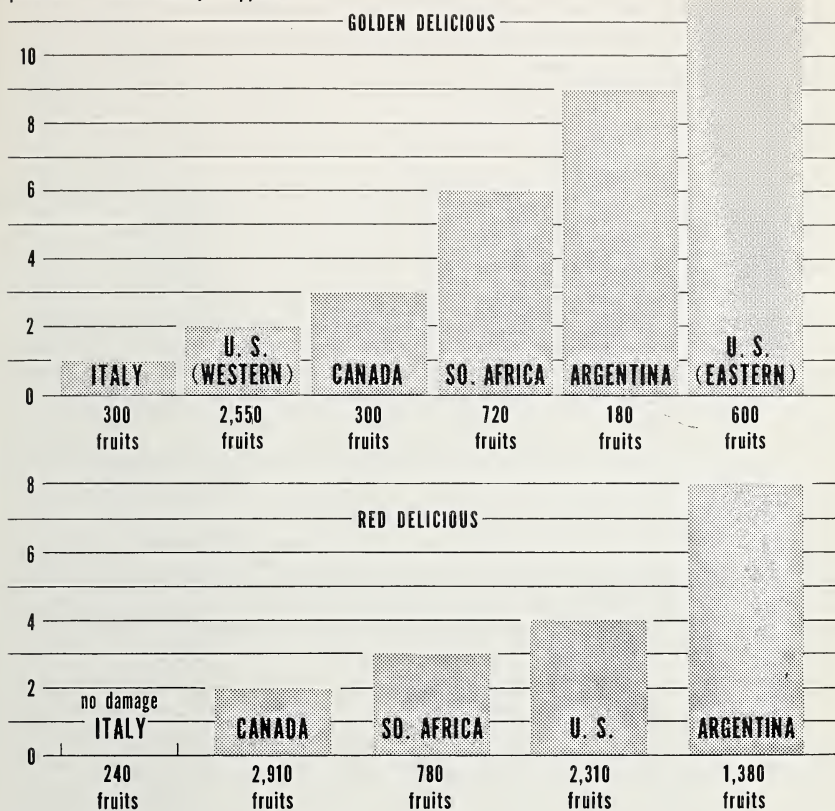
Most lots of Italian apples had an average of 1 percent or less decay, except samples of Belfort variety which averaged 3 percent decay. This variety also had 2 percent damage by bruising and 2 percent shriveled. Italian Kalterer lots averaged 4 percent damage by bruising.



fig. 4

## APPLES : damage by bruising

percent of each country's apples



Argentine varieties averaged from 6 to 9 percent damage by bruising and 1 percent or less decay, with 1 or 2 percent shriveling in King David and Jonathan lots.

New-crop varieties from South Africa, New Zealand, and Australia had little or no decay. Damage by bruising averaged from 2 to 6 percent in the various variety lots examined. Some bitter pit was found in most varieties from these countries. New Zealand lots averaged 4 to 7 percent bitter pit, Australian

Granny Smiths averaging 6 percent, and 1 to 2 percent was found in most varieties from South Africa.

Apples from all sources when packed in wooden boxes arrived on the London market with an average of 5 percent damage by bruising, while apples in fiberboard cartons averaged 2 percent. Those in wooden crates from Italy and England lots had an average of 3 percent damage by bruising (table 12). The relatively small number of lots of boxed apples from the United States arrived with an average of 6 percent damage by bruising, while the bulk of the arrivals which were in cartons averaged 3 percent. Canadian apples showed a similar ratio, having an average of 4 percent damage by bruising in boxed lots and 2 percent in cartons. Boxed apple shipments from Argentina generally arrived with the pack tight to very tight, many lots having an excessively high lid bulge. As a result, damage by bruising in boxed lots from Argentina averaged 7 percent, while cartons averaged 3 percent. Italian shipments averaged 3 percent damage by bruising when apples were packed in wooden boxes or crates and 2 percent in cartons. New-crop varieties from New Zealand, South Africa, and Australia were all packed in wooden boxes and had an average of 4 to 5 percent damage by bruising.

Packs rated as "Tight", amounting to over one-quarter of all the samples examined, averaged 5 percent damage by bruising. These were practically all packed in wooden boxes. Packs rated as "Fairly tight", on the other hand, averaged only 2 percent damage by bruising. These packs accounted for over half of all the samples and were predominately cartons. Carton lots showing one-half-inch slack had an average of 3 percent damage by bruising, and the few lots, also in cartons, with 1-inch slack averaged 4 percent damage by bruising.

More damage by bruising was found in the riper lots of apples from storage than in firm or hard samples (table 13). The 19 out of 20 lots of Golden Delicious from eastern United States which were ripe had from 6 to 40 percent damage by bruising, averaging 12 percent. The other lot, which was firm-ripe, had 13 percent. Ripe lots of Golden Delicious from western United States averaged 3 percent damage by bruising, while the firm lots had no bruising. U.S. lots of Newtowns and Winesaps reported as hard had no bruising damage, firm lots averaged 1 to 2 percent, and firm-ripe lots of Winesaps averaged 1 percent, while Newtowns averaged 4 percent. Lots of Canadian Winesaps reported as ripe averaged 7 percent damage by bruising, firm-ripe lots averaged 2 percent and firm lots, 3 percent. Italian apples showed about the same general relationship of bruising to degree of firmness.

Lots of new-crop apples from South Africa, Argentina, New Zealand, and Australia that were reported as hard or firm averaged mostly 2 to 5 percent damage by bruising, with a few varieties



averaging as much as 7 percent. Ripe and firm-ripe lots of Golden Delicious and Red Delicious from both South Africa and Argentina averaged 6 to 11 percent damage by bruising.

### Pears

Limited supplies of U.S.-grown pears, consisting of Winter Nelis and Anjou varieties, were available during January and early February. Clapp's Favorite variety started to arrive from South Africa the latter part of January, followed closely by Bon Chretien and by Williams variety from Argentina. Bon Chretien and Williams variety are similar to our Bartlett. B. Hardy, Packham Triumph, and B. Bosc varieties from South Africa were in plentiful supply by March 1. The latter part of March, various varieties began arriving from New Zealand, including Packham Triumph, L. Bonne De Jersey, B. Bosc, W. Cole, Comice, Williams, Bon Chretien, and others. Shortly after, Packham Triumph variety arrived from Australia. English-grown Conference variety and B. Hardy variety from the Netherlands were available throughout most of the survey, but offered little competition because of the limited supply.

The standard pear box was the customary container, except for English and Dutch pears which were in various type trays and crates and for Australian pears which were in flat divided boxes. Polyethylene box liners were found on all lots of pears from the United States, but were not used by any other country. All pears were wrapped, except some trays of English Conference variety. Containers generally were in good condition.

### Grade Markings

As with apples, the use of both State and Federal grades on pears from the United States was confusing to London importers although they were not in violation of the U.S. Export Apple and Pear Act. For instance, few receivers were aware of the fact that Washington Fancy grade is identical to U.S. No. 2 grade. The trade naturally expected pears marked "Fancy", even if preceded by the State of origin, such as "Washington Fancy", to be superior to a lot marked "U.S. No. 1". Most competing countries use one set of standards, and export only one grade of pears to the London market. Shipments from both South Africa and Argentina were marked "Choice", while arrivals from New Zealand and Australia were marked "Fancy".

### General Appearance

Appearance ratings were based on uniformity and brightness of color, shape, smoothness, and freedom from permanent and condition defects. Natural russeting characteristic of such varieties

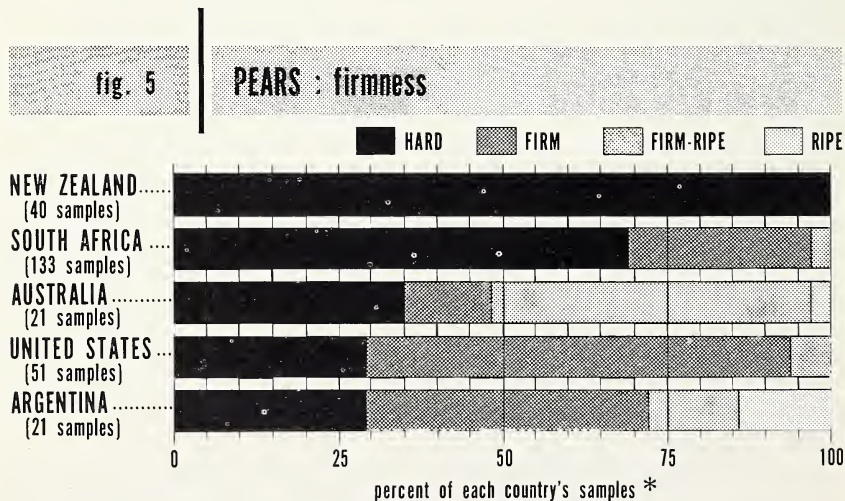
as Winter Nelis, Bosc, and Conference was not discounted in making the appearance ratings.

The 80 percent of U.S.-grown pears that rated a "Good" general appearance were Anjous and a few Winter Nelis. The 20 percent of the samples rated only "Fair" were mostly lots of Winter Nelis variety showing some off-condition (table 14). Shipments from South Africa and New Zealand were rated about even, with 74 and 72 percent, respectively, having "Good" appearance. Samples of Argentine shipments included only Williams variety, which has a rather tender skin and is susceptible to dark skin discoloration. This defect accounted for rating 71 percent of the lots from Argentina only "Fair". Arrivals from England, the Netherlands, and Australia all presented a "Good" appearance.

**Maturity.**--Ground color of pears is a general index of firmness. It was noted however, that ground color in some varieties was more closely related to firmness than in others (table 15).

U.S.-grown pears were generally of good saleable firmness, 29 percent of the lots being hard, 65 percent firm, and 6 percent firm-ripe. Two-thirds of the samples of pears from the United States had green to light-green ground color; most of the remainder were yellowish green.

South African varieties showed a close relationship between firmness and ground color. Over two-thirds of the samples were hard and the same proportion had green ground color. Williams



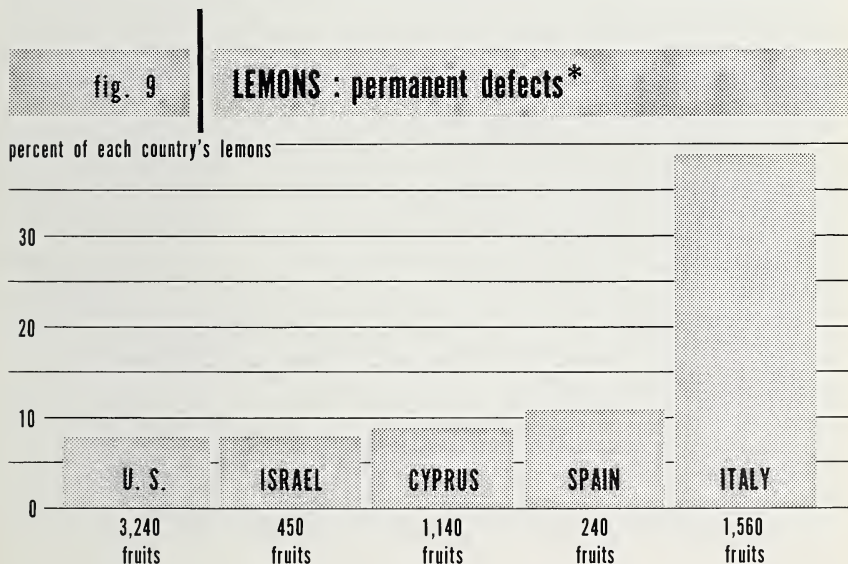
\* EACH SAMPLE = 30 PEARS

variety from Argentina and Packham Triumph from Australia varied rather widely in firmness but most lots of these varieties maintained a green ground color. All varieties from New Zealand arrived in a hard condition, with green ground color.

Permanent Defects.--The U.S. Standards for Winter Pears or Summer and Fall Pears were applied, depending upon the variety involved, in evaluating samples for both permanent and condition defects. In grading samples from the United States, only those factors which are scorable against the grade as marked on the container were taken into consideration. U.S. No. 2 grade requirements were applied to lots marked Washington or Oregon "Fancy". For lots from competing countries, the U.S. No. 1 grade requirements were applied. Permanent grade defects consist chiefly of roughness of the surface, russetting, scars, punctures, and misshapen.

Samples from arrivals of U.S.-grown pears averaged 3 percent permanent defects, while South African, Argentine, and English arrivals averaged 5 percent (table 16). Damage by scars was the most common defect found. Packham Triumph variety, particularly from Australia and New Zealand, was inclined to be bumpy. This factor accounted for most of the 7 and 8 percent total defects for samples from these 2 countries.

Condition Defects.--Skin discoloration and decay were the principal condition defects found. The 21 lots of Anjou variety from



\* SCARS, ROUGHNESS AND MISSHAPING, SUNBURN, AND GREENNESS.

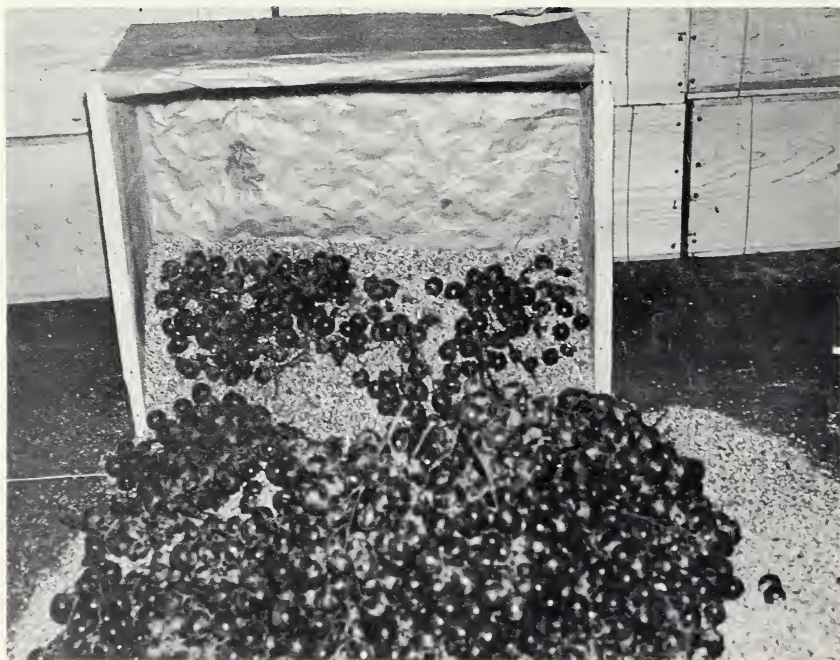


the United States that were examined had no decay and no scorable damage by skin discoloration. About two-thirds of the 30 lots of Winter Nelis variety had no decay and one-third had 3 to 10 percent, averaging 1 percent. Five-sixths of the lots of this variety had no skin discoloration and one-sixth had 3 to 10 percent scorable damage, averaging less than 1 percent.

Williams variety pears from Argentina had 10 percent damage due to skin discoloration, and all varieties from New Zealand, an average of 8 percent (table 17). English-grown pears averaged 1 percent decay, while receipts from South Africa and Argentina averaged less than one-half of 1 percent, and no decay was found in samples from other countries.

### Grapes

All grapes from the United States included in the survey were Emperor variety, packed in sawdust in 34-lb. wirebound chests, except one shipment in 23-lb. lugs. Between January 2 and February 16, 1961, the only period during the course of the survey when U.S. grapes were available on the market, 87 samples were examined. The entire contents of a single container were



Emperor grapes from the United States displayed for sale at Covent Garden.



considered a sample unit.

Spanish Almeria grapes were in competition with U.S. grapes only briefly following the holidays. Only five samples of Almeria grapes were examined. They were packed in 10- or 22-lb. lugs.

Receipts of grapes from South Africa started to arrive in limited quantities the latter part of January. From January 16th to March 22nd, a total of 114 samples were examined. Early receipts were the Queen of the Vineyard variety, followed by Waltham Cross and Alphonse Lavalle. This latter variety has large blue berries. Both of the other varieties are light green, changing to amber, with fairly large to large berries. All receipts from South Africa were in 10-lb. lugs labeled "D.F.B." (Deciduous Fruit Board). Each bunch was individually wrapped and packed in excelsior.

At the auctions and at the importer's stores the entire contents of chests of U.S. grapes are displayed by dumping the grapes onto benches or into flats. At the stores, grapes were frequently dumped on the store floor, with the empty chest upright at the back of the display. South African grapes were displayed by unwrapping three or four bunches from a lug. Wire screening usually was placed over the auction samples from South Africa and Spain to prevent pilferage.

### Grade Markings

The following grade marks were observed on chests of grapes from the United States: U.S. No. 1 Sawdust Pack, U.S. No. 1 or Better, U.S. No. 1 Well Within, and U.S. No. 1 South African arrivals were all marked "Choice".

### General Appearance

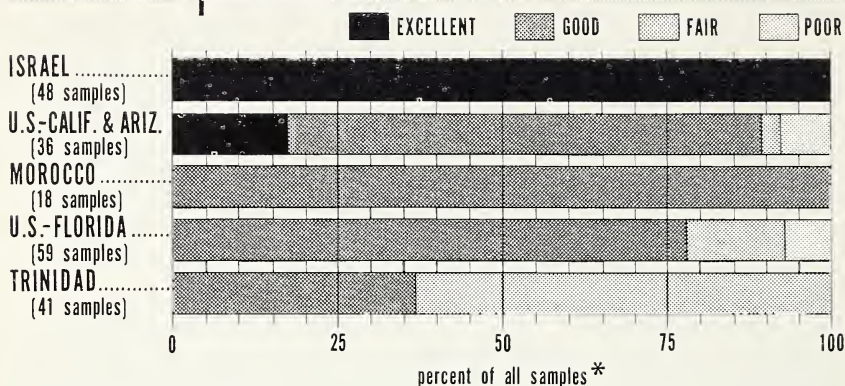
Each lot was evaluated as to general appearance based on the brightness and extent of color, firmness and condition of berries, condition of stems, presence or absence of mold, decay, and wet berries.

Slightly less than one-third of the samples of U.S. Emperor grapes were rated as having a "Good" appearance, two-fifths were rated "Fair", and one-fifth "Dull" (table 18). Only a few lots of Spanish Almeria grapes were examined. They were rated "Good" in appearance, as were the green-colored varieties, Queen of the Vineyard and Waltham Cross, from South Africa. All samples of Alphonse Lavalle variety had full dark-blue color and were rated "Excellent".

Color.--Lack of satisfactory color of U.S. grapes was a frequent complaint. Importers were hopeful of receiving grapes

fig. 10

## GRAPEFRUIT : appearance rating



\* EACH SAMPLE = 30 GRAPEFRUIT

having bright attractive red color over the entire surface of the berries. The minimum color requirements defined in the U.S. Standards for Grapes are based on the color of individual bunches. These minimum color requirements were considered below importers' expectations.

The usual method of determining compliance with U.S. grade requirements (based on color of individual bunches in a sample unit) did not seem practical for the purpose of this survey. Instead, an estimate was made of the percentage of berries in the entire container having 60 percent or more of the surface with characteristic color. The extent and brightness of color were quite variable between containers in a shipment and between shipments. No samples were observed having color below the minimum requirements of U.S. No. 1 grade.

Of the 87 samples of U.S. Emperors examined, only 28 rated a "Good" appearance. In 22 of these samples, 95 to 100 percent of the berries had 60 percent or more of the surface with characteristic color (table 19). Two samples having all berries colored were rated only "Fair" or "Dull" on appearance because of dull or "tired" appearance. Most of the 34 lots receiving a "Fair" rating had 85 percent or less of characteristic color. The poor arrival condition due to shriveling and decay accounted for the "Dull" and "Poor" ratings given some lots.

Condition.--While most lots of U.S. Emperor grapes had no shriveling, about one-fifth of the samples had 10 to 25 percent

shriveled berries (table 20). There was no shriveling or pitting of berries in lots from Spain or South Africa.

All U.S. grape shipments were packed in sawdust. When the berries are dry and firm, the sawdust may be easily shaken loose with none adhering to the berries or bunch. However, when berries become wet or decayed, sawdust sticks closely to the bunch and even penetrates decayed berries. Thus, the absence or presence of decay became an important factor in the attractiveness and saleability of U.S. grapes.

Decay was present in slightly more than two-thirds of the U.S. grapes inspected, with 16 percent of the samples having from 5 to as much as 50 percent decay (table 21). However, most lots had 1 percent or less decay. Several small lots having high percentages of decay were reported to have been returned to importers by buyers. These were observed but not included in the survey records. Only fresh arrivals were used for the survey.

Grapes from Spain and South Africa showed less decay than those from the United States. One reason is that the South African grapes were freshly harvested, while the U.S. Emperors were from storage.

In general, the stems of the U.S. Emperors from storage were dry and brown, while the new-crop grapes from South Africa mostly had stems that were turning brown, with a few that were brown and dry.

Soluble solids determinations were made on a number of samples of South African grapes. Refractometer readings were taken on individual berries selected at random from sample units.

The lower readings--as low as 11 and 12 percent--were found in the early arrivals (table 22). Percentage of soluble solids improved as the season progressed, with some readings as high as 20 and 21 percent. The mostly range was 13 to 18 percent.

### Lemons

Samples of U.S.-grown lemons were inspected during the period January 10th to April 16th. Chief competition was furnished by shipments from Italy and Cyprus, with limited supplies arriving from Israel and Spain. All U.S. receipts were in fiberboard cartons with fruit not wrapped. Cartons generally were in good condition, except for trans-shipments from continental ports which had many cartons buckled and creased. Most Italian lemons were wrapped and packed in nailed half-crates which varied in dimensions according to the size of lemons packed. Some fiberboard cartons also were used. Cyprus lemons were wrapped, packed in cartons. Israeli lemons were wrapped, packed in half-box wirebound crates. Lemons from Spain were wrapped, packed in nailed half boxes. Containers were generally in good



condition, except one lot from Cyprus, which had some cartons dirty or stained.

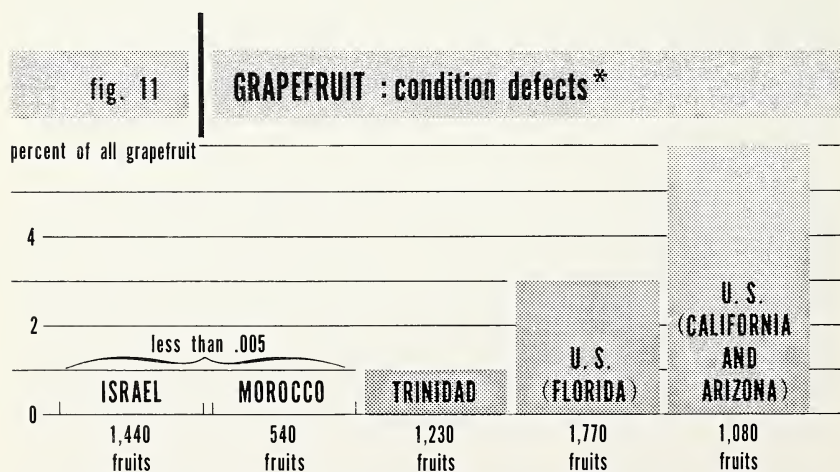
Only lots from Italy were stamped as to grade (Prima or Seconda). Containers of both grades bore similar labels. Other lots, including U.S.-grown lemons, had no significant grade marks. Containers of Cyprus lemons were not stamped as to grade but were labeled "First Grade".

### General Appearance

Appearance ratings were made on lemons based on color, smoothness and freedom from scarring, misshapen, and other permanent and condition defects. Most lots of U.S.-grown lemons were well colored, while all lots from competing sources were well colored (table 23).

All samples of lemons from Israel were rated "Good" in appearance, while approximately three-fourths of the samples from the United States and Cyprus received a "Good" rating. Because U.S. lemons were not wrapped, advanced stages of decay spread mold over sound fruit in some samples, resulting in 23 percent of the lots rating only "Fair". Although Italian and Cyprus lemons were well colored, ridging, lumpiness, and scarring in some lots reduced their appearance ratings; 88 percent of Italian samples rated "Fair" and 12 percent "Poor".

Defects.---All lots were graded for defects on the basis of the requirements of U.S. No. 1 grade. Lack of "reasonable



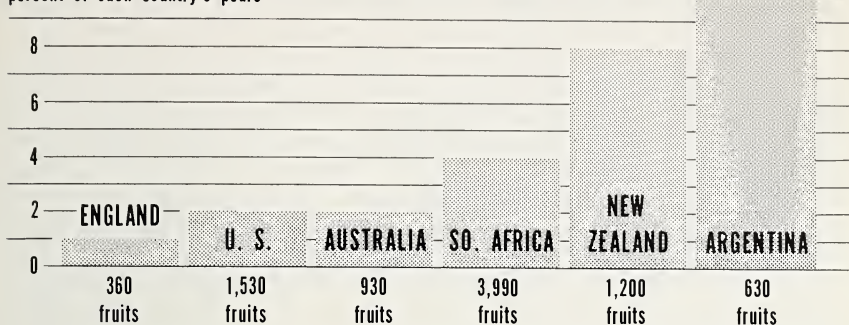
\* DECAY, BRUISING, AND SKIN BREAKDOWN.



fig. 6

**PEARS : condition defects\***

percent of each country's pears



\* DECAY, DISCOLORATION, BRUISING, AND SHRIVELING.

smoothness" was classed as "rough". Coarse pebbling, which was prevalent on Italian lemons, was not considered objectionable, but ridging and lumpiness were scored. Juice content was not considered.

U.S., Cyprus, and Israeli lemon samples averaged 8 to 9 percent permanent defects (table 24). Practically all samples of lemons from the United States had some permanent defects, ranging from 3 to 27 percent and averaging 8 percent. These defects were mostly scars, with some roughness and sunburned. Italian lots, with an average of 39 percent permanent defects, were considerably below the requirements of U.S. No. 1 grade.

U.S., Cyprus, and Spanish lots of lemons averaged 1 percent decay. Nearly nine-tenths of the lots from the United States had no decay. Those showing some decay had from 3 to 10 percent of the fruit affected. No decay was found in samples from Italy or Israel.

Grapefruit

California and Arizona grapefruit in half-box fiberboard cartons and Florida grapefruit in half-box wirebound crates were examined on the London market during the period mid-March to mid-April. All of the U.S. fruit was without wraps.

Shipments from Israel, Morocco, and Trinidad were in competition with U.S. fruit during this period. Grapefruit from Israel was clean, bright, and attractive and wrapped and packed in

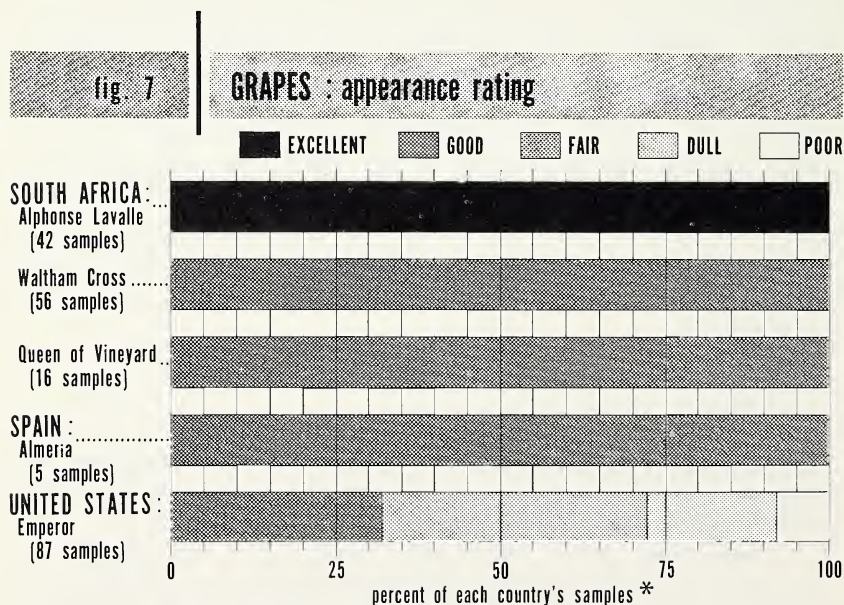
extra large boxes, wirebound crates, or fiberboard cartons. Moroccan fruit was clean and well colored, and packed in standard nailed citrus boxes or three-quarter wirebound crates, without wraps. Trinidad grapefruit was in wirebound crates and was wrapped; it generally had slight skin discoloration, resembling Florida fruit in appearance. All grapefruit was Marsh Seedless variety.

U.S.-grown grapefruit has real competition, particularly from fruit from Israel. Carton packs from California and Arizona were generally well received, but a few shipments having as high as 40 percent decay required repacking. Cartons having decayed fruit were wet and in poor condition. Some lots of Florida grapefruit were also wastey, showing up to 17 percent decay and required reconditioning. Wirebound crates were in good condition and were reused after reconditioning the fruit.

### General Appearance

Appearance ratings made on grapefruit were based on brightness and uniformity of color, uniformity of size, freedom from discoloration, and freedom from permanent and condition defects.

About one-sixth of the samples of California-Arizona grapefruit rated "Excellent," and three-quarters rated "Good" (table 25).



\* EACH SAMPLE = 34 LB. OF GRAPES

None of the samples from Florida had an "Excellent" appearance, but about three-quarters were "Good", and one-sixth rated "Fair". Decayed fruit, and mold associated with it, accounted for "Poor" ratings on about one-twelfth of the U.S. lots. All samples from Israel were rated "Excellent". All Moroccan lots rated "Good". Samples from Trinidad rated 37 percent "Good" and 63 percent "Fair" on account of discoloration and other defects.

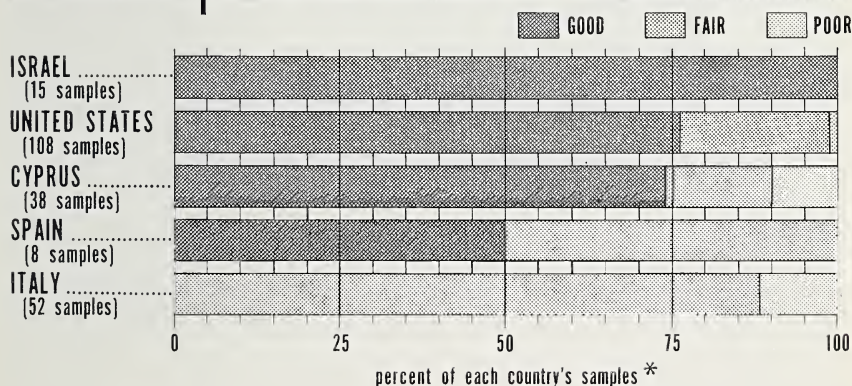
**Permanent Defects.**--In grading for defects, requirements of U.S. No. 1 grade in the U.S. Standards for Florida Grapefruit were applied to Florida and Trinidad lots. The U.S. No. 1 grade in the Standards for California-Arizona Grapefruit was applied to all other lots.

Permanent defects in samples from all sources were well within the grade tolerance, averaging 3 to 4 percent with the exception of fruit from Trinidad, which averaged 11 percent (table 26).

**Condition Defects.**--Decay and skin breakdown were the principal condition defects. About three-quarters of the lots of California-Arizona grapefruit examined had no decay. Most of the other one-quarter of the samples had 3 to 13 percent decay, some running as high as 40 percent. All lots from this source averaged 4 percent (table 26). Slightly more than half of the samples from California-Arizona had no damage from skin breakdown; the remainder generally had 3 to 6 percent, with a few

fig. 8

# LEMONS : appearance rating



\* EACH SAMPLE = 30 LEMONS



samples up to 20 percent; the average for all samples was 2 percent. Two-thirds of the Florida samples had no decay and one-third had 3 to 17 percent. The average was 2 percent for all samples. There was less than one-half of 1 percent skin breakdown in the Florida lots.

Trinidad samples had 1 percent decay; there was less than one-half of 1 percent decay in Israeli lots.

### Oranges

There were no U.S.-grown oranges on the London market during the survey. Supplies from several other sources, however, were available throughout the period. A total of 104 samples were inspected from February 20 to March 29. Although the season for the Spanish Navel variety was about over, 24 lots of this variety were sampled. The 16 samples from Morocco that were examined included Navel, Vernia, and Late Valencia types, while the 64 samples from Israel inspected were the Shamouti variety. This variety resembles the Valencia orange but is slightly elongated. Blood oranges (Sanguinelli variety) were plentiful during the latter part of the survey but were not included. Eating quality of all varieties was good to excellent.

Oranges arrived on the market from Israel in several types of containers, as did grapefruit; the extra-large box, half-box fiberboard carton, and half-box wirebound crate were the chief containers used. Morocco and Spain used the standard nailed orange box, with some wirebound half-box crates arriving from Spain. Israel and Spanish fruit was wrapped, while Moroccan oranges were not.

All lots were bright, clean, and well-colored and presented a good appearance.

All lots examined resembled the types of oranges grown in California and Arizona more closely than fruit from Florida. Consequently, permanent defects were scored against the U.S. No. 1 grade in the U.S. Standards for California and Arizona Oranges.

Damage by scars was the chief permanent defect, although an occasional coarse, misshapen, or sunburned fruit was scored (table 27). Total defects averaged within the tolerance permitted in the U.S. No. 1 grade.

There were practically no condition defects in Israeli and Moroccan oranges, while Spanish oranges averaged 4 percent defects, including 1 percent decay and 2 percent damage by bruising (table 28).

Spanish Navel oranges, nearing the end of their season, averaged a total of 4 percent condition defects, including 1 percent decay, 1 percent skin breakdown, and 2 percent damage by bruising. Israeli and Moroccan oranges arrived in relatively good condition, having an average of only 1 percent fruit showing condition defects.



## MISCELLANEOUS OBSERVATIONS

### Consignments and Cash Purchases

It was understood that growers and shippers in Italy and Spain consign much of their fruit to London importers. Also, that most English-grown fruit is distributed to the wholesaler on a consignment basis. In contrast, most U.S. and Canadian fruit sold in the United Kingdom has been purchased outright prior to shipment. The importer takes the gamble. If the supplies are not up to expectations or the market buyers are not satisfied with the deliveries, the importer must take the loss. The importer may request relief from the supplier or he may decide he has learned his lesson and resolve to avoid a repetition in the future. However, if the fruit is satisfactory and the importer makes a profit on his investment, it is likely that he will continue to look favorably on U.S. fruit.

### Fruit Boards and Panels

An importer considers himself fortunate if his firm is selected by the Fruit Board or Commission responsible for marketing fruit from its country. The Deciduous Fruit Board (D.F.B.) of South Africa, for example, maintains several firms on



Two-wheeled cart, called market barrow in England, is in common use in London fruit and vegetable markets.

its selling panel. New Zealand fruit is sold in London by only five companies on the Covent Garden Market and by three auction brokers--two at Spitalfields and one at the Borough Market. These companies must make favorable accounting to the board or commission in order to hold their accounts. They have no cash invested in the fruit but must maintain an active sales staff.

### Handling Products in the Market

The large, open, flat-bodied truck is the common means used to deliver produce to and from receivers' places of business. Little or no rail transportation of produce was in evidence. Traffic congestion in the market areas was common. Considerable physical labor was required to unload and reload deliveries. Porters frequently used a specially constructed "market barrow" which would carry 1,000 pounds or more, to deliver lots from the dealer's store to the buyer's truck. Buyer's trucks usually were parked in side-streets bordering on the market area.

### Other Products

Hothouse products were quite prevalent on the Covent Garden market during the period of the survey, particularly grapes, cucumbers, and strawberries. Belgian hothouse grapes, packed in small containers, carefully and neatly protected by plastic



Chinese gooseberries (center) from New Zealand displayed at Covent Garden with Spanish oranges and Italian apples.

foam padding, were in constant but limited supply and were not included in our survey. Only specialty houses sold these grapes and then at prices two and three times that of the U.S. Emperor variety. The perfection and presentation of these grapes gave them the appearance of artificial fruit.

Belgium also shipped hothouse strawberries to this market, packed in small flats containing a single layer of berries arranged on plastic foam padding 3 x 3, 3 x 4, 4 x 4, etc., according to size of berries. Early offerings were quoted as selling for 9 shillings a flat or about a shilling (14 cents) per berry for the large sizes. Some early varieties of peaches were also offered in small flats, packed in a single layer on plastic foam pads.

Several unusual fruits were observed including Chinese gooseberries, passion fruit, tree tomatoes, and custard apples.

## CONCLUSIONS

The following conclusions, based on the results of this survey, are not necessarily listed in the order of their relative importance.

1. Fruit exporting countries competing with the United States are grading and packing their fruits to standards in line with the best U.S. practices. Many countries are also adopting new types of shipping containers similar to those used by U.S. fruit exporters.

2. Numerous complaints were heard about the net weight of U.S. cartons of apples. When a United Kingdom retailer buys a carton of eating apples, he wants to be fairly certain of the net weight of fruit he will get because he sells by the pound. Weight of cartons of apples was not surveyed, but it was reported that U.S. cartons of apples vary considerably in net weights. When standard western boxes were being used more widely for U.S. exports, the retailer was reasonably sure of the net weight of apples he would receive. An attempt to pack cartons to a more uniform minimum weight, possibly making this a part of the export sales agreement, would be well received by the London trade.

3. The irregular-size cartons used for packing different counts of apples in eastern United States were not well received. These off-size packs add to the buyer's problems of net weight. A uniform-size carton for export is preferred.

4. Uniformity of sizing of U.S. apples could be improved. Variations of as much as one-fourth inch in minimum diameter were found between cartons with the same count mark. Only a



slight variation may account for the pack being fairly tight or as much as 1-inch slack. Slackness of pack, of course, is related to net weight.

5. Use of polyethylene box liners was particularly effective in preventing shriveling of Golden Delicious apples and maintaining desirable firmness of pears.

6. The London market prefers green-colored eating apples. Varieties, such as Newtowns and Golden Delicious, showing a change to yellow are discounted in price. Exporters may wish to keep this in mind in filling London orders.

7. Comments were heard both favoring and disapproving the packing of fruit without wraps. Wraps appear to protect the fruit somewhat and, when mold is present, as in citrus fruits, prevents it from spreading to sound fruit. Spread of mold or decay through containers of unwrapped fruit materially detracts from the general appearance.

8. Use of both State and U.S. grade marks is misleading to importers and a cause of complaints, particularly since, for some fruits, comparable grade designations do not have the same requirements. Washington, Virginia, and U.S. "Extra Fancy" grades for apples--all with different requirements--is an example. However, no violations were observed of the marking requirements in the regulations under the U.S. Export Apple and Pear Act. Variations in the U.S. No. 1 grade marks on Emperor grapes also were not understood by importers.

9. Only top-quality fruit exports from the United States can compete effectively on the London market. Apples particularly should comply with the U.S. Condition Standards for Export immediately prior to being shipped.



# STATISTICAL APPENDIX

Table 1. Apples: Percent of sample units packed in major types of containers, by country of origin

Country of origin	No. of samples <sup>1</sup>	Type of container			
		Wooden box	Fiberboard cartons	Slatted crate	Total
	Number	Percent	Percent	Percent	Percent
United States..	384	6	94	-	100
Canada .....	207	6	94	-	100
Italy .....	244	6	64	30	100
New Zealand..	101	100	-	-	100
South Africa ..	106	100	-	-	100
Argentina ....	110	95	5	-	100
England .....	62	23	74	3	100
Denmark .....	41	-	100	-	100
Australia.....	30	100	-	-	100
France.....	4	-	100	-	100

<sup>1</sup>Each sample consisted of 30 apples.

Table 2. U. S. and Canadian Apples: Variation in tightness of pack related to type of container

Container	No. of samples <sup>1</sup>	Tightness of pack						
		Tight	Fairly tight	1/2" slack	1" slack	1 1/2" slack	Loose	Total
	Number	Percent	Percent	Percent	Percent	Percent	Percent	Percent
<u>U. S. apples:</u>								
Carton (telescope)								
- tray.....	341	1	53	30	15	1	<sup>2</sup>	100
Carton (telescope)								
- foam divider....	15	-	67	26	7	-	-	100
Carton (stapled)								
- cell.....	6	100	-	-	-	-	-	100
Western box .....	22	68	27	-	-	-	5	100
<u>Canadian apples:</u>								
Carton (telescope and stapled) - cell....	105	10	85	-	4	-	1	100
Carton (telescope)								
- tray.....	90	-	47	30	21	2	-	100
Western box .....	12	17	83	-	-	-	-	100

<sup>1</sup>Each sample consisted of 30 apples.

<sup>2</sup>Less than one-half of 1 percent.

Table 3. Apples: General appearance ratings for all varieties combined, by country of origin

Country of origin	No. of samples <sup>1</sup>	Appearance rating				
		Excellent	Good	Fair	Poor	Total
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
United States ..	384	11	66	22	1	100
Canada .....	207	6	72	21	1	100
England .....	62	-	18	69	13	100
Denmark .....	41	-	20	60	20	100
New Zealand...	101	-	84	16	-	100
South Africa ...	106	-	91	9	-	100
Australia.....	30	-	100	-	-	100
France .....	4	-	100	-	-	100
Italy .....	244	2	73	24	1	100
Argentina.....	110	-	86	14	-	100

<sup>1</sup>Each sample consisted of 30 apples.

Table 4. Apples: General appearance ratings for Red Delicious and Golden Delicious varieties, by country of origin

Variety and country of origin	No. of samples <sup>1</sup>	Appearance rating				
		Excellent	Good	Fair	Poor	Total

Red Delicious:

	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
United States .....	77	5	68	27	-	100
Canada .....	97	7	65	28	2	100
France .....	2	-	100	-	-	100
Italy.....	8	-	37	63	-	100
Argentina.....	46	-	87	13	-	100
South Africa (Starking).....	26	-	100	-	-	100

Golden Delicious:

United States (western).....	85	8	78	12	2	100
United States (eastern) .....	20	-	30	60	10	100
Canada .....	10	-	40	60	-	100
France .....	2	-	100	-	-	100
Italy .....	10	-	100	-	-	100
Argentina.....	6	-	100	-	-	100
South Africa.....	24	-	100	-	-	100

<sup>1</sup>Each sample consisted of 30 apples.

Table 5. Apples: Percent meeting color requirements of U.S. grades, by variety, country of origin, and grade marked

Variety and country of origin	Grade marked	No. of samples	Meeting color requirements for:					Total
			U. S. Extra Fancy	U. S. Fancy	U. S. No. 1	Below U. S. No. 1		
<u>Red Delicious:</u>								
		<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	
United States	Ex. Fancy	840	93	7	1	-		100
	Fancy	1,470	46	52	2	-		100
Canada . . . .	Ex. Fancy	1,080	97	3	1	-		100
	Fancy	1,830	66	33	1	-		100
So. Africa . .	Choice	780	68	27	5	1		100
Argentina . . .	Choice	1,380	44	34	22	-		100
Italy . . . . .	Prima	240	42	30	27			100
<u>Winesap:</u>								
United States	Ex. Fancy	840	99	1	-	-		100
	Fancy	480	51	48	1	-		100
Canada . . . .	Ex. Fancy	600	99	1	-	-		100
	Fancy	750	61	39	1	1		100
<u>Cox Orange</u>								
<u>Pippin:</u>								
England . . . .	Various	1,860	13	22	60	5		100
Denmark . . .	Various	1,230	14	25	52	9		100
So. Africa . .	Choice	330	47	29	23	1		100
N. Zealand . .	Fancy	2,040	9	32	58	1		100
<u>Kalterer:</u>								
Italy . . . . .	Prima	2,370	18	34	40	8		100
<u>Belfort:</u>								
Italy . . . . .	Prima	1,650	31	32	34	3		100
<u>Red Rome:</u>								
Italy . . . . .	Prima	1,320	40	26	27	7		100
<u>Stayman:</u>								
Italy . . . . .	Prima	300	53	22	25	-		100
<u>King David:</u>								
Argentina . . .	Choice	1,260	49	29	19	3		100
<u>Jonathan:</u>								
So. Africa . .	Choice	390	29	33	30	8		100
Argentina . . .	Choice	480	33	28	34	5		100

<sup>1</sup>Less than one-half of 1 percent.



Table 6. Apples: Percent all red varieties and grades combined meeting the color requirements of U.S. grades, by country of origin

Country of origin	No. of apples	Meeting color requirements for:				
		U.S. Extra Fancy	U.S. Fancy	U.S. No. 1	Below U.S. No. 1	Total
	Number	Percent	Percent	Percent	Percent	Percent
United States ...	3,630	70	29	1	-	100
Canada .....	4,260	78	22	1	-	100
South Africa ....	1,500	53	29	16	2	100
Argentina.....	3,120	44	31	23	2	100
Italy .....	5,880	29	31	34	6	100
England .....	1,860	13	22	60	5	100
Denmark .....	1,230	14	25	52	9	100
New Zealand....	2,040	9	32	58	1	100

<sup>1</sup>Less than one-half of 1 percent.

Table 7. Apples: Percent of green or yellow varieties showing various shades of color, by variety and country of origin

Variety and country of origin	No. of samples <sup>1</sup>	Green	Green to L. green	Light green	L. green to yellow	Yellow	Total
	Number	Percent	Percent	Percent	Percent	Percent	Percent
<u>Golden Delicious:</u>							
U.S. (western)...	85	-	-	12	46	42	100
U.S. (eastern)...	20	-	-	-	45	55	100
Canada .....	10	-	-	-	-	100	100
France .....	2	-	-	100	-	-	100
Italy .....	10	10	-	40	50	-	100
Argentina.....	6	-	-	100	-	-	100
South Africa.....	24	29	-	71	-	-	100
<u>Newtown:</u>							
United States.....	139	39	16	24	21	-	100
Canada .....	35	49	-	34	17	-	100
<u>Dunn's Seedling:</u>							
New Zealand .....	12	33	-	67	-	-	100
South Africa.....	20	90	-	10	-	-	100
<u>Lavine:</u>							
Italy.....	36	28	5	67	-	-	100
<u>Granny Smith:</u>							
Australia .....	30	<sup>2</sup> 100	-	-	-	-	100

<sup>1</sup>Each sample consisted of 30 apples.

<sup>2</sup>60 percent were dark green.

Table 8. Apples: Uniformity of sizing, by country of origin

Country of origin	No. of samples <sup>1</sup>	Percent with irregular sizing	Country of origin	No. of samples <sup>1</sup>	Percent with irregular sizing
	Number	Percent		Number	Percent
United States ...	384	5	South Africa...	106	0
Canada .....	207	2	Italy .....	244	3
England .....	62	0	Argentina .....	110	4
Denmark .....	41	2	Australia.....	30	0
New Zealand....	101	2	France.....	4	0

<sup>1</sup>Each sample consisted of 30 apples.

Table 9. Apples: Percent showing various permanent defects, by country of origin and variety

Country of origin and variety	No. of apples	Permanent defects					
		Scars	Russeting	Misshapen	Off-color	Other <sup>1</sup>	Total
	Number	Percent	Percent	Percent	Percent	Percent	Percent
<b>United States:</b>							
Golden Delicious (western)	2,550	2	2	2	-	1	3
Golden Delicious (eastern)	600	1	3	1	-	1	6
Red Delicious	2,310	1	2	2	4	1	8
Newtown	4,170	2	2	2	-	1	5
Winesap	1,320	2	2	2	1	1	4
McIntosh <sup>3</sup>	180	-	-	3	1	-	4
Various <sup>4</sup>	390	4	-	2	2	-	6
Total	11,520	2	1	1	1	1	6
<b>Canada:</b>							
Golden Delicious	300	-	2	-	-	1	3
Red Delicious	2,910	1	2	2	2	1	6
Newtown	1,050	2	2	1	-	1	6
Winesap	1,350	2	2	1	1	2	4
McIntosh	420	-	-	2	4	3	9
Total	6,030	1	1	2	1	1	6
<b>Italy:</b>							
Golden Delicious	300	-	7	-	-	-	7
Red Delicious	240	4	-	3	1	2	10
Stayman	300	4	-	-	-	1	5
Lavine	1,140	2	8	2	-	1	9
Red Rome	1,320	2	2	1	7	2	10
Belfort	1,650	2	3	1	3	1	10
Kalterer	2,370	1	1	2	9	2	11
Total	7,320	1	2	1	5	1	10
<b>England:</b>							
Cox Orange Pippin	1,860	1	5	2	5	2	12
<b>South Africa:</b>							
Golden Delicious	720	3	1	2	-	2	5
Starking (Red Delicious)	780	3	-	3	-	2	6
Delicious	360	2	-	2	-	1	5
Jonathan	390	1	3	-	-	2	6
Cox Orange Pippin	330	1	6	1	1	-	9
Dunn's Seedling	600	2	6	2	-	1	8
Total	3,180	2	2	1	2	1	6
<b>Argentina:</b>							
Golden Delicious	180	2	-	2	-	2	6
Red Delicious	1,380	2	-	3	-	2	5
King David	1,260	4	-	2	-	2	6
Jonathan	480	4	1	1	-	-	6
Total	3,300	3	2	2	-	1	6
<b>New Zealand:</b>							
Cox Orange Pippin	2,040	2	5	-	1	1	9
Dunn's Seedling	360	2	4	1	-	2	7
Various <sup>5</sup>	630	1	6	2	-	-	9
Total	3,030	1	5	2	1	1	8
<b>Australia:</b>							
Granny Smith	900	3	-	2	-	-	5
<b>Denmark:</b>							
Cox Orange Pippin	1,230	2	4	2	9	-	15

<sup>1</sup>Includes sunburn, scab, insect injury, punctures, and cuts.

<sup>2</sup>Less than one-half of 1 percent.

<sup>3</sup>From Massachusetts.

<sup>4</sup>Includes Stayman, Red Yorking, Red York, and Winesap from West Virginia.

<sup>5</sup>Includes Cleopatra, Worcester, Bledisloe Cox, Kidd's Orange Cox, and Jonathan.

Table 10. Apples: Percent with varying degrees of firmness,  
by variety and country of origin

Variety and country of origin	No. of apples	Degree of firmness				
		Hard	Firm	Firm-ripe	Ripe	Total
<u>Golden Delicious:</u>	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
U. S. (western)...	2,550	0	1	48	51	100
U. S. (eastern)...	600	0	0	5	95	100
Canada .....	300	0	0	0	100	100
Italy .....	300	0	0	10	90	100
Argentina .....	180	0	0	67	33	100
South Africa.....	720	17	66	0	17	100
France.....	60	0	0	0	100	100
<u>Red Delicious:</u>						
United States ....	2,310	0	0	69	31	100
Canada .....	2,910	0	0	65	35	100
Italy .....	240	0	0	0	100	100
Argentina .....	1,380	5	9	43	43	100
South Africa.....	780	8	77	0	15	100
France.....	60	0	0	100	0	100
<u>Delicious:</u>						
South Africa ....	360	8	92	0	0	100
<u>Newtown:</u>						
United States ....	4,170	3	81	16	0	100
Canada.....	1,050	0	60	40	0	100
<u>Winesap:</u>						
United States ....	1,320	5	41	54	0	100
Canada.....	1,350	0	47	49	4	100
<u>McIntosh:</u>						
United States.....	180	0	0	67	33	100
Canada.....	420	0	0	29	71	100
<u>Stayman:</u>						
United States ....	60	0	0	100	0	100
Canada .....	60	0	0	0	100	100
Italy .....	300	0	0	40	60	100
<u>Red Rome:</u>						
Canada .....	120	0	0	0	100	100
Italy .....	1,320	0	0	9	91	100
<u>Cox Orange Pippin:</u>						
England.....	1,860	0	0	3	97	100
Denmark.....	1,230	0	0	15	85	100
New Zealand.....	2,040	0	0	100	0	100
South Africa ....	330	73	27	0	0	100
<u>Dunn's Seedling:</u>						
New Zealand.....	360	33	67	0	0	100
South Africa.....	600	90	10	0	0	100
<u>Jonathan:</u>						
Argentina .....	480	12	0	25	63	100
South Africa.....	390	23	77	0	0	100
<u>Lavine:</u>						
Italy .....	1,140	0	50	34	16	100
<u>Belfort:</u>						
Italy .....	1,650	0	0	2	98	100
<u>Kalterer:</u>						
Italy .....	2,370	0	0	23	77	100
<u>King David:</u>						
Argentina .....	1,260	24	0	40	36	100
<u>Granny Smith:</u>						
Australia.....	900	100	0	0	0	100



Table 11. Apples: Percent showing various condition defects, by variety and country of origin

Variety and country of origin	No. of apples	Decay	Scald	Damage by shriveling	Damage by bruising	Other <sup>1</sup>	Total
<b>Golden Delicious:</b>	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
U. S. (western)	2,550	1	0	1	2	1	5
U. S. (eastern)	600	2	0	0	12	0	14
Canada.....	300	5	0	5	3	0	13
Italy .....	300	<sup>2</sup>	0	2	1	0	3
Argentina .....	180	0	0	0	9	0	9
South Africa ...	720	<sup>2</sup>	0	0	6	2	8
France .....	60	2	0	0	0	0	2
<b>Red Delicious:</b>							
United States ..	2,310	1	<sup>2</sup>	0	4	<sup>2</sup>	6
Canada .....	2,910	1	2	0	2	<sup>2</sup>	5
Italy .....	240	0	0	0	0	0	0
Argentina .....	1,380	<sup>2</sup>	0	0	8	0	8
South Africa ...	780	1	0	0	3	1	5
France .....	60	0	0	0	0	0	0
<b>Delicious:</b>							
South Africa ...	360	1	0	0	2	2	5
<b>Newtown:</b>							
United States ..	4,170	1	0	0	2	<sup>2</sup>	3
Canada .....	1,050	<sup>2</sup>	0	0	2	0	2
<b>Winesap:</b>							
United States ..	1,320	<sup>2</sup>	0	0	1	0	1
Canada .....	1,350	<sup>2</sup>	0	0	3	0	3
<b>McIntosh:</b>							
United States ..	180	0	0	0	6	0	6
Canada.....	420	<sup>2</sup>	3	0	1	<sup>2</sup>	4
<b>Stayman:</b>							
United States ..	60	0	0	0	7	0	7
Canada.....	60	0	0	0	5	0	5
Italy.....	300	0	<sup>2</sup>	6	0	0	6
<b>Red Rome:</b>							
Canada .....	120	1	7	0	0	0	8
Italy.....	1,320	<sup>2</sup>	2	0	1	<sup>2</sup>	3
<b>Cox Orange Pippin:</b>							
England .....	1,860	1	0	3	1	<sup>2</sup>	5
Denmark.....	1,230	1	0	4	2	1	8
New Zealand ..	2,040	<sup>2</sup>	0	<sup>2</sup>	3	6	10
South Africa ...	330	1	0	0	2	1	4
<b>Dunn's Seedling:</b>							
New Zealand...	360	0	0	0	2	4	6
South Africa ...	600	0	0	0	3	1	4
<b>Jonathan:</b>							
Argentina .....	480	1	0	2	6	0	9
South Africa ...	390	1	0	0	4	0	5
<b>Lavine:</b>							
Italy .....	1,140	0	1	<sup>2</sup>	<sup>2</sup>	0	2
<b>Belfort:</b>							
Italy .....	1,650	3	0	2	2	1	8
<b>Kalterer:</b>							
Italy .....	2,370	1	0	0	4	0	5
<b>King David:</b>							
Argentina .....	1,260	1	0	1	6	0	8
<b>Granny Smith:</b>							
Australia.....	900	0	0	0	5	6	11

<sup>1</sup>Includes internal breakdown, bitter pit, watercore, internal browning, and fruit spotting.

<sup>2</sup>Less than one-half of 1 percent.

Table 12. Apples: Percent of all varieties showing damage by bruising related to type of container, by country of origin

Country of origin	No. of apples	Average damage by bruising in relation to type of container		
		Wooden boxes	Fiberboard cartons	Slatted crates
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
United States .....	11,520	6	3	-
Canada .....	6,210	4	2	-
Italy .....	7,320	3	2	3
N. Zealand .....	3,030	4	-	-
S. Africa .....	3,180	4	-	-
Argentina .....	3,300	7	3	-
England .....	1,860	1	1	0
Denmark .....	1,230	-	2	-
Australia .....	900	5	-	-
France .....	120	-	0	-
Total .....	38,670	<sup>1</sup> 5	<sup>2</sup> 2	<sup>3</sup> 3

<sup>1</sup>Represents 31 percent of all samples examined.

<sup>2</sup>Represents 63 percent of all samples examined.

<sup>3</sup>Represents 6 percent of all samples examined.

Table 13. Apples: Percent showing damage by bruising as related to firmness, by variety and country of origin

Variety and country of origin	No. of apples	Average damage by bruising in relation to firmness of fruit <sup>1</sup>			
		Hard	Firm	Firm-ripe	Ripe
<b>Golden Delicious:</b>	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
U.S. (western).....	2,550	-	0	1	3
U.S. (eastern).....	600	-	-	13	12
Canada .....	300	-	-	-	3
Italy .....	300	-	-	0	1
Argentina .....	180	-	-	10	7
South Africa .....	720	4	5	-	9
France .....	60	-	-	-	0
<b>Red Delicious:</b>					
United States .....	2,310	-	-	4	5
Canada .....	2,910	-	-	2	2
Italy .....	240	-	-	-	0
Argentina .....	1,380	0	2	6	11
South Africa .....	780	3	2	-	8
France.....	60	-	0	-	-
<b>Delicious:</b>					
South Africa .....	360	0	3	-	-
<b>Newtown:</b>					
United States .....	4,170	0	2	4	-
Canada.....	1,050	-	1	4	-
<b>Winesap:</b>					
United States .....	1,320	0	1	1	-
Canada.....	1,350	-	3	2	7
<b>McIntosh:</b>					
United States .....	180	-	-	6	7
Canada .....	420	-	-	1	1
<b>Stayman:</b>					
United States .....	60	-	-	2	-
Canada .....	60	-	-	-	5
Italy .....	300	-	-	4	7
<b>Red Rome:</b>					
Canada .....	120	-	-	-	0
Italy .....	1,320	-	-	2	1
<b>Cox Orange Pippin:</b>					
England .....	1,860	-	-	0	1
Denmark .....	1,230	-	-	0	2
New Zealand.....	2,040	-	-	3	-
South Africa .....	330	2	3	-	-
<b>Dunn's Seedling:</b>					
New Zealand.....	360	1	2	-	-
South Africa .....	600	3	7	-	-
<b>Jonathan:</b>					
Argentina .....	480	0	-	2	9
South Africa .....	390	2	5	-	-
<b>Lavine:</b>					
Italy .....	1,140	-	2	1	0
<b>Belfort:</b>					
Italy .....	1,650	-	-	3	2
<b>Kalterer:</b>					
Italy .....	2,370	-	-	2	4
<b>King David:</b>					
Argentina .....	1,260	7	-	5	6
<b>Granny Smith:</b>					
Australia .....	900	5	-	-	-

<sup>1</sup>Dash indicates no samples of this type; zero indicates absence of damage by bruising on the samples examined.

<sup>2</sup>Less than one-half of 1 percent.



Table 14. Pears: Appearance ratings of all varieties combined, by country of origin

Country of origin	No. of samples <sup>1</sup>	Percent of samples with appearance rating of:			
		Good	Fair	Poor	Total
	Number	Percent	Percent	Percent	Percent
South Africa .....	133	74	26	0	100
United States .....	51	80	20	0	100
New Zealand .....	40	72	28	0	100
Australia .....	31	100	0	0	100
Argentina .....	21	29	71	0	100
England .....	12	100	0	0	100
Netherlands .....	5	100	0	0	100

<sup>1</sup>Each sample consisted of 30 pears.

Table 15. Pears: Maturity related to ground color, all varieties combined, by country of origin

Country of origin	No. of samples <sup>1</sup>	Percent of samples with firmness of:				Percent of samples with ground color <sup>2</sup> of:				
		Hard	Firm	Firm-ripe	Ripe	Green	Green-l. green	Light green	Yellowish green	Yellow
	Number	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
South Africa..	133	69	28	3	0	69	0	26	5	0
United States..	51	29	65	6	0	4	65	4	27	0
New Zealand..	40	100	0	0	0	<sup>3</sup> 100	0	0	0	0
Australia ....	31	35	13	48	3	94	0	0	6	0
Argentina ....	21	29	43	14	14	71	0	14	10	5
England .....	12	17	83	0	0	83	0	0	17	0
Netherlands..	5	100	0	0	0	100	0	0	0	0

<sup>1</sup>Each sample consisted of 30 pears.

<sup>2</sup>Based on ground color terms outlined in the U. S. Standards for Pears.

<sup>3</sup>Includes 25 percent rated "Dark Green".

Table 16. Pears: Permanent defects, all varieties combined, by country of origin

Country of origin	No. of pears	Percent of samples showing permanent defects of:					
		Roughness	Russetting	Scars	Cuts & punctures	Misshapen	Total
	Number	Percent	Percent	Percent	Percent	Percent	Percent
South Africa...	3,990	<sup>1</sup>	<sup>1</sup>	3	<sup>1</sup>	1	5
United States..	1,530	1	0	1	1	0	3
New Zealand..	1,200	4	1	3	0	0	8
Australia .....	930	4	2	1	0	0	7
Argentina .....	630	0	0	4	0	1	5
England .....	360	0	0	3	1	1	5
Netherlands...	150	0	0	0	1	0	1

<sup>1</sup>Less than one-half of 1 percent.

Table 17. Pears: Condition defects, all varieties combined, by country of origin

Country of origin	No. of pears	Percent of samples showing condition defects of:			
		Decay	Discoloration	Other <sup>1</sup>	Total
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
South Africa....	3,990	<sup>2</sup>	3	<sup>2</sup>	4
United States...	1,530	1	1	0	2
New Zealand...	1,200	0	8	0	8
Australia .....	930	0	2	0	2
Argentina .....	630	<sup>2</sup>	10	0	10
England .....	360	1	0	0	1
Netherlands....	150	0	0	0	0

<sup>1</sup>Includes damage by bruising and shriveling.

<sup>2</sup>Less than one-half of 1 percent.

Table 18. Grapes: Appearance rating, by variety and country of origin

Country	Variety	No. of samples <sup>1</sup>	Percent of samples with appearance rating of:					
			Excellent	Good	Fair	Dull	Poor	Total
		<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
United States....	Emperor	87	0	32	40	20	8	100
Spain .....	Almeria	5	0	100	0	0	0	100
South Africa .....	Queen of Vineyard	16	0	100	0	0	0	100
	Waltham Cross	56	0	100	0	0	0	100
	Alphonse Lavalle	42	100	0	0	0	0	100

<sup>1</sup>Each sample consisted of 34 pounds of grapes.

Table 19. U. S. Emperor Grapes: Color in relation to appearance

Percent of characteristic color	No. of samples	Appearance rating			
		Good	Fair	Dull	Poor
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
100	13	11	1	1	0
95	11	11	0	0	0
90	9	2	3	3	1
85	20	2	10	4	4
75	27	2	18	6	1
65	7	0	2	4	1
Total	87	28	34	18	7

Table 20. U. S. Emperor Grapes: Prevalence of shriveling

Berries in sample affected by shriveling	Percent of samples	Berries in sample affected by shriveling	Percent of samples
<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
None	78	20	1
5	1	25	1
10	13		
15	6	Total	100

Table 21. U.S. Emperor grapes: Prevalence of decay

Berries in sample affected by decay	Percent of samples	Berries in sample affected by decay	Percent of samples
<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
None	32	15	1
Less than 1/2	9	25	1
1/2 to less than 1	27	50	2
1	16		
5	5	Total	100
10	7		

Table 22. South African grapes: Range of soluble solids, by variety

Variety	No. of readings	Soluble solids		
		Total range	Mostly range	Average
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Queen of the Vineyard.....	3	14.0 to 14.5	-	14.18
Waltham Cross .....	27	11.0 to 20.1	14.0 to 18.0	16.06
Alphonse Lavalle .....	15	12.4 to 21.2	13.0 to 16.8	15.04

Table 23. Lemons: Appearance rating and color, by country of origin

Country of origin	No. of samples <sup>1</sup>	Percent of samples with appearance rating of:				Percent of samples with color of:			
		Good	Fair	Poor	Total	Well-colored	Fairly well-colored	Mixed color	Total
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
United States.....	108	76	23	1	100	85	6	8	100
Italy .....	52	0	88	12	100	100	0	0	100
Cyprus .....	38	74	16	10	100	100	0	0	100
Israel .....	15	100	0	0	100	100	0	0	100
Spain.....	8	50	50	0	100	100	0	0	100

<sup>1</sup>Each sample consisted of 30 lemons.Table 24. Lemons: Permanent defects, by country of origin

Country of origin	No. of lemons	Percent of samples showing permanent defects of:				
		Scars	Rough and misshapen	Sunburn	Green	Total
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
United States .....	3,240	6	2	<sup>1</sup>	<sup>1</sup>	8
Italy .....	1,560	3	35	1	0	39
Cyprus .....	1,140	3	6	<sup>1</sup>	<sup>1</sup>	9
Israel.....	450	4	3	0	1	8
Spain .....	240	0	6	5	<sup>1</sup>	11

<sup>1</sup>Less than one-half of 1 percent.



Table 25. Grapefruit: Appearance ratings, by country of origin

Country of origin	No. of samples <sup>1</sup>	Percent of samples with appearance rating of:				
		Excellent	Good	Fair	Poor	Total
United States:	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Florida .....	59	0	78	15	7	100
California- Arizona .....	36	17	72	3	8	100
Israel .....	48	100	0	0	0	100
Morocco .....	18	0	100	0	0	100
Trinidad .....	41	0	37	63	0	100

<sup>1</sup>Each sample consisted of 30 grapefruit.Table 26. Grapefruit: Permanent defects and condition defects, by country of origin

Country of origin	No. of grapefruit	Percent of samples showing permanent defects of:					Percent of samples showing condition defects of:			
		Scars	Pulled stems	Dis-colored	Mis-shapen	Total	Decay	Damage by bruising	Skin break-down	Total
United States:	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Florida .....	1,770	3	1	1	0	5	2	0	1	3
California-Arizona .....	1,080	2	0	0	2	4	4	0	2	6
Israel .....	1,440	3	0	0	1	3	1	1	0	1
Morocco .....	540	1	0	1	1	3	0	0		1
Trinidad .....	1,230	4	0	5	2	11	1	0	0	1

<sup>1</sup>Less than one-half of 1 percent.Table 27. Oranges: Permanent defects, by country of origin

Country of origin	No. of oranges	Average percent showing permanent defects of:					
		Scars	Coarseness	Misshapen	Sunburn	Other <sup>1</sup>	Total
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Israel .....	1,920	3	1	1	0	1	6
Morocco .....	480	4	2	2	0	2	5
Spain .....	720	4	1	2	1	0	6

<sup>1</sup>Includes creasing and punctures.<sup>2</sup>Less than one-half of 1 percent.Table 28. Oranges: Condition defects, by country of origin

Country of origin	No. of oranges	Average percent showing condition defects of:				
		Decay	Softness	Breakdown	Damage by bruising	Total
	<i>Number</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Israel .....	1,920	1	1	1	0	1
Morocco .....	480	1	0	1	0	1
Spain .....	720	1	0	1	2	4

<sup>1</sup>Less than one-half of 1 percent.

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